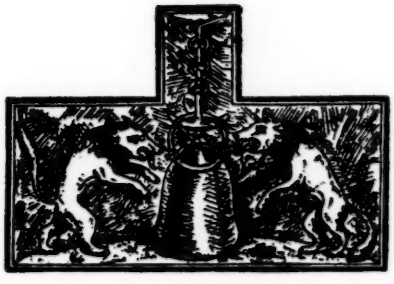
THOUGHT

A Quarterly of The Sciences and Letters



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THOUGHT

VOLUME VIII MARCH, 1934 NUMBER 4

The Queen of the Troubadours

MARY FRANCES BURKE, M.A.

ELEANOR of Aquitaine was the granddaughter of William IX of Poitiers, whose character is thus delineated by one of his contemporaries:[1]

> Now the Count of Poitiers was one of the most courteous men in the world, and one of the greatest deceivers of ladies—a valiant knight in warfare and bounteous in love and gallantry. And he knew well to sing and to make poetry, and long time went through the world beguiling ladies.

This gifted and unscrupulous nobleman is believed to have been the first of the troubadours, so his granddaughter came naturally by her enthusiasm for their productions.

Troubadour poetry which, in the twelfth century, burst forth in all its fresh beauty like a blossoming pear tree in spring, only to droop and disappear in the fourteenth, is one of the glories of medieval French literature. These lyrics were extremely complicated in technique and sometimes artificial in sentiment, but they were notable for a certain charming felicity of expression, for their amazing virtuosity in rhyming, possible only in a language as supple as old Proven-

[1]Lives of the Troubadours, tr. by Ida Farnell, p. 17.

çal, and for the idealism which transcended their sensuality. Ida Farnell's comment on the troubadour age helps in the understanding of the work it produced:[2]

> We must regard it as a time of lofty principles and a time when a great and, on the whole, a noble effort was made toward the dispersion of intellectual darkness, but on the other hand one in which the savage instincts of centuries were but ill-suppressed, and the ideals but very imperfectly realized. It is, however, of the highest importance to us that such aspirations existed. The influence of the Provençal poets, childish, narrow, ill-disciplined as they were, has lasted on through centuries, and some of the noblest sides of human life are still those that owe their origin to Provençal chivalry.

William IX, whom I have mentioned, Duke of Aquitaine and Count of Poitiers, died in 1127. His son, William X, unlike his father had a reputation for piety which earned him the title "Saint William" among his subjects. In his last years he made a pilgrimage to the shrine of St. James at Compostella, and died there. He had previously announced that his daughter Eleanor should inherit all his possessions, and should marry the son of Louis VI of France.

I

Eleanor was born in 1122. So when her father died in 1137, his vast estates were left as absolute possessions to a girl of fifteen. Of her life up to the time of her father's death there are no records, and nothing can be said of it with certainty. But brought up in the elegant and refined environment of the courts of the Midi, and with troubadour blood in her veins, it is likely that she early manifested that interest in literature which was to last throughout her long life. In tastes as in character, she was always nearer to her grandfather than to her father.

That Eleanor was personally charming all historians are agreed, and the praises of contemporary poets who celebrated her beauty and wit, though they sound extravagant, are not all

[2]Ibid., Introd., p. 9.

flattery:[3] *"L'éclat de sa beauté égalait celui de sa naissance, et un esprit pénétrant, delicat et cultivé relevait en elle ses prerogatives de la nature."* She knew how to read and write and was an accomplished musician. Henry Adams calls her "the greatest of all Frenchwomen," and adds that "about no figure in the Middle Ages did so many legends grow and with such freedom as about Eleanor, whose strength appealed to French sympathies and whose adventures appealed to the imagination."[4]

She must early have made the acquaintance of some of the most famous of the troubadours. Marcabrun was a contemporary of her grandfather and a frequent visitor at his court. Her father was the patron of Cercamon, and the *planh* or lament written by the poet on his patron's death may still be read.

In the month of August 1137 was celebrated the marriage of Eleanor with Louis VII of France, called "Le Jeune." The wedding took place at Bordeaux. Cercamon in another poem refers to the coming marriage and remarks, "We shall have a new Count at Pentecost," for by reason of this union, Louis was recognized as Count of Poitiers and Duke of Aquitaine. These lands which the young man was to rule as Eleanor's consort were far more extensive than those which he already held as King of France.

II

Eleanor's first marriage was of great significance from a literary as well as from a political point of view. When she journeyed north to her husband's domain, Eleanor was accompanied by members of her own gallant Southern court. Thus the troubadour poetry of *"lange d'oc"* was first made known in northern France, where the poets of *"langue d'oui"* very soon began to imitate it. Gaston Paris says that Eleanor herself

[3] *Histoire Litteraire de Poitou,* Dreux-Duradier, tome II, p. 1.
[4] Mont St. Michel and Chartres, p. 210.

probably advised the minstrels who wished to please her to learn the intricate art of the troubadours. A Norman chronicle, from which M. Paul Meyer has recently published some extracts, states that Eleanor continued to speak in Provençal while at the court of the King of France. At any rate from this time on the poetry of the *trouvères* of the North plainly shows an ever-increasing similarity in form, subject-matter, and spirit to that of the troubadours.

The new queen of France continued to spend a large part of her time in her ancestral dominions, where she held court in the cities of Bordeaux and Poitiers. In "gay Guienne," as her land was called in the songs, Eleanor's sovereignty was not political only:[5] "She was by hereditary right chief reviewer and critic of the poets. All new *sirventes* and *chansons* were sung or recited before her by the troubadours. She then, assisted by a conclave of her ladies, sat in judgment and pronounced sentence on their literary merits."

It was in these courts that the principles of "courtly love" had their origin, principles which were to play so large and important a part in medieval romance, and were, in some degree, to leave their imprint on the song and story of every European nation from that time to our own. In these brilliant gatherings of knights and ladies, minstrels and poets, was formulated a code of love, as it were a system of etiquette for lovers. The principal tenets of this arbitrary system were, briefly, the supremacy of woman over man who is her willing servant, the patience, discretion, and secrecy requisite on the part of both lovers, and the coldness expected of the lady who must not too soon show sympathy to her admirer, and who may only be won after the lover's affection had been proved by many deeds of valor. The practise of the principles of *courtoisie* could not help but exert a refining and controlling influence on the manners of men of the time, rough warriors accustomed to taking by force whatever they wanted. But the

[5]Lives of the Queens of England, Strickland, Vol. I, p. 167.

morality of certain features of the system was questionable. For instance, the fact that a lady was already married was no impediment to her joining in the game of "courteous love." This was the origin of the secrecy enjoined on the lover, who must never refer to his beloved except by a *senhal* or pseudonym.

In 1147, when Eleanor had been married ten years, her husband set out for the Holy Land to take part in the Second Crusade, and she accompanied him. Eleanor of Aquitaine has been given, quite unjustly, so bad a reputation in history that readers accept unquestioningly any scandalous anecdote about her. The accusation has been made, unwarranted by facts, that on her arrival in Antioch Eleanor carried on a disgraceful intrigue with her relative, Raymond of Poitou, who was prince there. This is based on the fact that Louis, her husband, forced her to leave Antioch against her will and hurried her to Jerusalem. Also, there was a letter to Louis from the Abbot Suger, his prime minister, commending the King for concealing his anger at his wife until they should return to France. Eleanor was young, lively, beautiful, and probably somewhat imprudent. Her husband was strict, ascetically inclined, scrupulous, probably jealous. This would account for the hasty removal from Antioch, where Louis was annoyed by his wife's admiration for her young and handsome relative, whose intrigues, many authorities admit, were very likely wholly political. Raymond was trying to persuade Eleanor to employ her power as Duchess of Aquitaine to his advantage —a rather common form of intra-family graft not unknown in our own day. Suger's letter does not mention any definite charge against the Queen, and the venerable and sagacious minister does not appear to have taken very seriously Louis' complaints about his spouse.

In 1149, the royal couple returned to France where they continued to live together for three years. It seems that if Eleanor had been as flagrantly unfaithful as she is accused of having been, not even the consideration of losing her territorial pos-

sessions would have kept the proud and upright Louis from divorcing her at once.

In 1172, application was made for an annulment of their marriage on grounds of consanguinity; they were fourth cousins. The application came from Eleanor herself. This is attested by the contemporary chronicles. It, therefore, seems somewhat presumptuous for historians to insist, after the lapse of so many centuries, that it was really Louis who repudiated his wife. The annulment was granted in the same year by a council of bishops at Beaugency.

III

Soon afterward Eleanor's second marriage was celebrated. Henry, Count of Anjou and Duke of Normandy, son of Matilda, the claimant to the English throne, was about ten years younger than his bride who was then thirty. He had at no time much affection for Eleanor, but what he admired and coveted were the vast dominions of which she was again sole mistress, and which, united to his own large inheritance, made him ruler of more than half of France.

Between 1152 and 1154, in the interval before Henry became King of England, Eleanor first met the famous troubadour, Bernard de Ventadour. This man, who has been called one of the greatest love-poets of medieval Europe, is mentioned by a contemporary, Hugh of St. Circ, in the old Provençal biography as follows:[6]

> Now Bernard de Ventadour was of Limousin of the Castle of Ventadour and was one of low degree, son to wit of a serving-man who gathered brushwood for the heating of the oven wherein was baked the castle bread. And he became a fair man and a skilled, and knew well to make poetry and to sing and was both courteous and learned. . . . And he got him to the Duchess of Normandy [Eleanor] who was young and of great worth, and who loved virtue and honor and poetry. And the *vers* and *canzones* of Bernard did greatly please her, and she received him at the court and gave him hearty welcome. Long did he dwell there, singing many a good song of her. And

[6]Lives of the Troubadours, p. 26.

he loved her and she him likewise. But King Henry of England withdrew her from Normandy, and brought her into England, while Bernard remained behind in grief and heaviness.

Of this meeting of the granddaughter of the first troubadour with one of the greatest of his successors, M. Fauriel says:[7]

Cette princesse, élevée au milieu des élégants et poétiques passe-temps des cours du Midi, avait conservée un goût très-vif pour tout ce qui lui rappelait les premières années et les premiers plaisirs de sa jeunesse. Accoutumée à bien accueillir les jongleurs et les troubadours, elle accueillit mieux que nul autre Bernard, alors le plus célèbre de tous. Eléonore était belle et jeune encore. Il n'en fallait pas tant pour enhardir Bernard à la choisir pour le sujet de ses nouveaux chants. Eléonore en fut charmée—plus charmée qu'il n'était permis au troubadour de l'espérer.

Forty-five of Bernard's poems are known to us and nineteen of his melodies. The latter show that he was also one of the best of troubadour musicians. He always took care to address the lady of his love poems by a *senhal*. His favorite names for Eleanor were *Azinam* (Magnet), and *Conort* (Comfort), and in certain songs where no name is mentioned, we know from allusions to England and Normandy that he was addressing her.

In 1153, Henry, with financial assistance from Eleanor, fitted out an exposition which invaded England and forced the recognition of his claims to the throne. The next year, accompanied by Eleanor, he went again to England where they were solemnly crowned King and Queen by the Archbishop Theobald.

Bernard of Ventadour was probably in Henry's train during the English expedition in 1153. These lines from a poem written to Eleanor at this time seem to indicate that the poet was then in England and she across the channel from him in Normandy:[8]

The song is quite complete, so that no word is lacking to it, beyond the land of Normandy across the wild deep sea, and if I am far from my lady, the fair one, whom God protect, draws me to her as with a magnet.

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[7] *Histoire de la Poesie Provençale*, C. C. Fauriel, tome II, p. 30.

[8] Troubador Poets, tr. by B. Smythe, p. 39.

If the English King and Norman Duke wishes it, I shall see her before the winter overtakes us.

For the King's sake I am English and Norman, and were it not for my Magnet, I should stay till after Christmas.

Bernard was the first troubadour to visit England which was considered by the French in his time a wild and barbarous land. Later, when Henry and Eleanor had established their court there, other poets found their way to the side of the poetry-loving queen, so that Eleanor's court in England became, as it had been in Normandy and, before that, in Paris, the center whence Provençal influence reached the singers of the north.

IV

The lyric poetry of England during the "Middle-English" period shows quite decidedly the influence of the troubadours. H. J. Chaytor deals with this subject very convincingly in "The Troubadours and England." The similarity between the English and Provençal lyric is noticeable in both form and content.

The first point of similarity in form is in the construction of stanzas. There are Middle-English examples of the Provençal *canso redonda* in which the second stanza inverts the order of rhymes in the first. In poems by the English Lawrence Minot is found the Provençal technique in the repetition of a certain word to unite the stanzas. The Provençal lyric frequently ended with a half-stanza containing an address or reference to the person for whom it was intended. This was called a *tornada* and is imitated in Middle English, and survives in the *envoi* in the French and English ballades. There is also similarity of form in the manner of the distribution of rhymes. A favorite troubadour form called *unissonance*—the same rhymes in every stanza—is used by Chaucer in the "envoy" of the "Clerk's Tale."

The similarity in content is more than mere coincidence, or the natural tendency of all lyric poets to express the same emotions. Certain conventional images and phrases used by the troubadours in their songs of courtly love are exactly repro-

duced in English poems. A common device was to begin with a reference to the season of the year and its correspondence or contrast with the poet's mood. This device is employed in "Alysoun," one of the earliest known poems in English. In troubadour parlance the lady is "enemy" to the lover and his peace of mind. Guilhelm de St. Leidier sings:

Pus er l'am tan que m'es mal enemia.
(I love her so, though she is my deadly enemy.)

And in a Middle-English poem we find the line:

Icham hire friend ant heo my fo.
(I am her friend and she my foe.)

A Provençal form called the *alba* or dawn song celebrates the parting of lovers at dawn. An instance of this in English is in Chaucer's "Troilus and Criseyde."[9] The speeches at the end of the balcony scene in "Romeo and Juliet" form a typical *alba.*

Lydgate's "Compleynt" is an imitation of the Provençal *revarsaris,* the poem of antitheses.

The *sirventes,* troubadour poems treating political and ethical issues instead of love, are well-represented in Middle English. And the English death-laments, written for Edward I and for Simon de Montfort, are imitations of the *planh,* using the conventional laudatory phrases for the deceased and references to the power of death.

The *tenso* was a popular form, a discussion in verse between two adversaries, defending or attacking a thesis laid down in the opening stanza. In England this form was much used for religious purposes, as in the "Dispute between Mary and the Cross" and the "Debate between Body and Soul." "The Owl and the Nightingale" is a further development of this form.

Mrs. Strickland says that England, by means of the marriage of her King to Eleanor, formed a close alliance with the most polished and civilized people on the face of the earth. In the arts, the ideals, and the refinements of life, Eleanor

[9]Troilus and Criseyde, iii, 1465, 1702.

brought acquisitions of even more importance to the Anglo-Norman people than her lands in France, that "great Provençal dower" on which Dante dwells with such earnestness. The wine trade between England and Eleanor's capital, Bordeaux, which was begun at this time was important as a means of continual interchange of ideas as well as of wine.

Henry II was himself a celebrated patron of literature, and his court was called a "paradise of scholars":[10]

> In palace and abbey, in the full glare and bustle of the court, no less than in the bookish atmosphere of the monastic cell, men were infected by a common ardor of intellectual enterprise and literary achievement. . . . Altogether there was in the country such a supply of writers and readers as would be found nowhere else in Europe except in the University of Paris itself.

In 1155, Wace, a native of the Isle of Jersey, but living at the English court, completed his "Roman de Brut." It was written in French in octo-syllabic couplets, and was based on Geoffrey of Monmouth's famous Latin prose work *"Historia Regum Britanniae."* Layamon, in his own "Brut" produced about fifty years later, wrote that Wace[11] "gave his book to the noble Eleanor who was the high King Henry's queen." The work thus dedicated to the Queen holds an important and interesting place in the history of the development of the Arthurian story. It is really a metrical chronicle, and as such occupies a position of intermediary between the prose chronicle, which was the favorite early medieval monastic form, and the metrical romance. Wace's work, though based on chronicle history, is addressed to a public whose taste was turning toward chivalric narrative. To please his royal patroness the poet brought the Arthurian story, for the first time, into the full tide of chivalry, and utilized every formal principle of *courtoisie*. These features, so essential to later Arthurian romance, had been absent from Geoffrey's account.

The patronage of Wace by Eleanor is an example of the interest shown by the Anglo-Norman court in the literary exploitation and dissemination of the legends of the ancient

[10]Cambridge History of English Literature, Vol. I, p. 191.
[11]Layamon's Brut, ll. 42, 43.

Britons. It is also exemplified in the charming *lais* of Marie de France. Not much is known of this lady except that she was noble, and that she lived at the court of Henry II. But it is very likely that it was Queen Eleanor rather than the more serious-minded King who encouraged Marie to write. The *lais* are dainty little romances in French verse, based on old Celtic legends, but refined and courtly in tone and atmosphere, carefully planned, well-proportioned and adroitly worked out.

In about 1160, Benoi de Sainte More wrote his *"Roman de Troie,"* which he is believed to have dedicated to Eleanor. He begins with the search for the Golden Fleece, and continues through the Trojan War to the homecoming of the heroes. All the characters are made into typical twelfth-century knights and ladies—in dress, in speech, and in principles. The belief that the poem was written under the patronage of Eleanor of Aquitaine is based on a reference, in the midst of a tirade on the weakness of women, to a *"riche dame de riche roi,"* whom he cites as an exception and to whom he apologizes for his previous remarks.

V

Eleanor and Henry had five sons: William, Henry (called the "Young King"), Richard the Lion Hearted, Geoffrey and John. Many and bitter were the political struggles among the sons, and between them and the king. In these Eleanor always sided with her sons against their father. So active became this championing of the rebellious princes, especially of Richard, who was her favorite, that Henry at length consigned his wife to an imprisonment, which, though not very severe or cruel, lasted for fourteen years.

The troubadour, Bertrand de Born, the greatest of the writers of *sirventes* or political poems, hated Henry II as did many other troubadours who considered him an interloper and the persecutor of their rightful princess, the Duchess of Aquitaine, his wife. Bertrand's ardent support of the cause of the princes and his efforts to rouse them to further rebellion by his songs, whenever a reconciliation seemed near, caused

Dante to condemn him to horrible tortures in his "Inferno" as a promoter of dissension in families. But it was a patriotic devotion to Eleanor rather than a love of discord for its own sake which inspired Bertrand. The following is a translation of one of the *sirventes* he wrote during the Queen's captivity:[12]

Daughter of Aquitaine, fair fruitful vine! Thou hast been torn from thy country and led into a strange land. Thy harp is changed into the voice of mourning, and thy songs into sounds of lamentation.

Brought up in delicacy and abundance, thou enjoy'dst a royal liberty, living in the bosom of wealth, delighting thyself with the sports of thy women, with their songs to the sound of the lute and tabor, and now thou mournest, thou weepest, thou consumest thyself with sorrow.

Return, poor prisoner, return to thy cities if thou canst and if thou canst not, weep and say "Alas, how long is my exile!"

Raise thy voice like a trumpet that thy sons may hear it; for the day is approaching when thy sons shall deliver thee, and then shalt thou see again thy native land.

The falsity of the story of the murder of the Fair Rosamund has been so often demonstrated that I need only mention it. According to the old ballads, Eleanor, while in a wood near the palace, came upon a silken thread which she followed, winding it into a ball, until it led her to Rosamund, Henry's mistress, in a bower in the midst of the wood. Thereupon Eleanor, in a jealous rage, is supposed to have either stabbed or poisoned her rival. As a matter of fact, records show that Rosamund Clifford, the prototype of the lady of the ballads, entered a convent at Godestow in 1176, and died there during the time of Eleanor's imprisonment. Henry Adams says:[13]

To the Frenchman, Eleanor remained always sympathetic, which is the more significant because in English tradition her character suffered a violent and incredible change. Although English history has lavished on Eleanor somewhat more than her due share of conventional moral reproof, considering that from the moment she married Henry of Anjou she was never charged with a breath of scandal, it atoned for her want of wickedness (by French standards) in the usual manner of historians, by inventing traits which reflected the moral standards of England. Tradition converted her into the

[12]Lives of the Queens of England, Strickland, Vol. I, p. 193.
[13]Mont St. Michel and Chartres, p. 211.

fairy-book type of feminine jealousy, and invented for her the legend of the Fair Rosamund and the poison of toads.

In 1189, Henry died and Eleanor was freed from her imprisonment. Richard became king, and during his prolonged absence in Palestine on the Third Crusade, it was Eleanor who acted as his representative in England, repressing the ambitions of John, and cleverly thwarting the designs of Philip Augustus of France.

Marie, her elder daughter, married Count Henry I of Champagne in 1164. Like her mother, she was an ardent patroness of poetry and of poets. The most illustrious habitué of her court was Chrétien de Troyes, the greatest writer of medieval romance. It was there that he became impregnated with the spirit of courtesy and was initiated into all the subtleties of the erotic theme. Chrétien himself claimed that the Countess of Champagne had provided him with both the matter and the *sen* (that is, the spirit) of *"Lancelot,"* or *"Le Conte de la Charrette,"* written in about 1172. Gaston Paris gives the credit for inspiring this famous romance indirectly to Eleanor who was familiar with the Celtic legends of Arthur, and from whom Marie probably heard them first.[14]

Eleanor's second daughter, Alice, who married Thibout, Count of Blois, was also an admirer of belles-lettres. Troubadours were graciously received at her court, and Gautier d'Arras, one of the best of the followers of Chrétien, lived and wrote there.

Richard, likewise, inherited his mother's tastes, and was

[14] *"Chrétien nous dit qu'il tenait sa matière de la Comtesse Marie et il est probable, en effet, que cette princesse, fille d'Eléonore d'Angleterre et restée en relation avec elle, avait entendu quelque resumé, plus ou moins fidèle, du poème anglo-normand et l'a transmis à Chrétien. Il nous dit aussi qu'elle lui avait fourni le sen, l'ésprit, de son œuvre, et tout porte à croire qu'il dit vrai. Marie, avec sa mère, a été l'une des principales instigatrices d'un mouvement mondain qui se produisit dans le second moitié du XII siècle, et qui a pour principaux caractères, le rapprochement du poésie du Nord et de celle du Midi, et la conception d'un amour raffiné, savant, intimement lié à la prouesse, et donnant à la femme, en tant que maîtresse, une importance qu'elle n'avait pas eu jusque-là. Cet amour est precisement l'inspiration du poème de Chrétien."* (Romania, Vol. XII, p. 534.)

always known as a liberal patron of poets. Bertrand de Born was his impassioned champion, and, among the other illustrious troubadours who were his friends, Arnaut Daniel and the Monk of Montaudon visited his court, and Gaucelm Faidit and Giraut de Bornelh wrote *planhs* voicing their sorrow when he died. In their songs they often contrasted his generosity to them with the meanness of Philip Augustus, the French King. The familiar story of Blondel, though not authenticated, may well be true. Richard was himself a writer of poetry, and the celebrated song, addressed to his half-sister, Marie from prison, remains to us.

VI

Queen Eleanor lived to be eighty years of age. In 1203, she retired to the monastery of Fontevrault, and died there, the thirty-first of March of that year.

Of her remarkable life, William Stubbs says in the introduction to the Rolls Series of MSS:

> Few women have had less justice done them in history than Eleanor. I do not speak of her moral qualities, though probably her faults have been exaggerated, but of her remarkable political power and her great influence, not only in her husband's states but in Europe generally, and of her great energy both in early youth and extreme old age. One can scarcely realize the length of her adventurous life in an age of short-lived heroes. At the age of seventy she found time and strength to journey to Messina with a wife for her son, Richard, to Rome on an embassy, and to Germany with the ransom her energy had helped to accumulate, and from her death-bed she was writing to the barons to keep them in allegiance.

In the necrology of the monastery of Fontevrault where her long life ended, may be read this eulogy of the much-maligned Eleanor of Aquitaine:

Nobilitatem generis vitae decoravit honestate
morum ditavit gratia
virtutum floribus picturavit
et incomparabilis probitatis honore fere cunctis praestitit
regibus mundanis.

Cosmic Rays

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A CONSIDERABLE amount of space has been given in newspapers to recent investigations of the so-called cosmic rays, and to discussions of their nature and origin, and of the light that they might throw on happenings outside of our planet. To understand the arguments, however, it is necessary to present a considerable number of other results of physics, because otherwise the methods of investigation cannot be understood. It shall be attempted here to outline the experimental proofs for many of the statements, although, of course, it is impossible to include all the details.

The word *rays* in the title does not imply any statement about the nature of the phenomenon concerned, but can be used for anything that is propagated in approximately straight lines with great velocity. *Cosmic* indicates that the origin of these rays is outside the earth. Later on we will have to discuss different types of rays and their action on matter, and use the results then to test the nature of the cosmic rays.

I

As far back as the end of the seventeenth and the beginning of the eighteenth centuries two theories about the nature of light were already discussed. The older theory was the wave theory of the Dutch physicist Huygens, who considered light as consisting of waves in analogy to sound, the wave character of which was well-known at the time. This theory, however, was discarded in favor of the particle theory of Sir Isaac Newton, according to whom light consisted of small particles flying in straight lines with enormous velocity. The great advantage of this latter theory was that it explained imme-

diately the propagation of light in straight lines, which was not easily explained on the basis of the other assumption. The universal acceptance of the wave theory, however, came about through the experiments of Thomas Young and Fresnel on interference after 1800. Already, in 1665, the Jesuit F. M. Grimaldi had observed that the image of a slit is accompanied by dark fringes (diffraction and interference), and had made the remark that it is possible that light added to light would give dark. These results, however, were too complicated to be interpreted at the time. The simplification came through Young's arrangement which showed that when the light from a lamp falls on two narrow slits in a dark plate and the light passing through is observed on a screen some distance behind the two slits, a regular arrangement of alternating bright and dark lines (fringes) will be observed. If, however, either one of the slits is covered so that no light can pass through, the whole screen is approximately uniformly bright. Now one cannot see how the granting of an alternating passage to a stream of particles could result in darkness. This follows, however, directly from the wave theory, because if a wave crest falls on an equally strong trough they compensate each other, and darkness results. It is extremely simple to calculate the wave-length, that is to say the distance between the successive crests. All one has to do is to measure the distance of the first dark fringe from each of the slits. The difference between these distances must be just one-half of the wave-length to give darkness.

Since Young's time a large amount of work has been done along these lines. The main advancement came though Maxwell's mathematical investigations of Faraday's experimental results, from which he drew the conclusion that electromagnetic waves must exist; these were then discovered experimentally in 1887 by Hertz, and have since lead to wireless telegraphy. It has since been shown that all these electromagnetic waves have the same velocity in a vacuum, namely 300,000 kilometers per second (186,000 miles per second) indepen-

dently of their wave-lengths. Their different properties are entirely determined by their wave-lengths, or, expressed in other terms, by their frequency, which is the number of wave crests passing a fixed point per second. A simple argument shows that the product of the wave-length and the frequency is equal to the velocity. Accordingly, light of long wave-lengths has a low frequency, light of short wave-lengths has a high frequency. We now know the characteristics of the waves included between wave-lengths of many miles down to wave-lengths of 10^{-12} cm.[1] The longest waves with which we are familiar are the waves found normally in the usual alternating current of the power industry and in the electromagnetic waves used in broadcasting. For example, a wave-length of a mile will have a frequency of 186,000, or as it is called in radio, 186 kilocycles. Still using the same methods by which these technical waves are generated it is possible to reach a wave-length of about 1 cm, or a frequency of 30,000 million per second—there is no essential change in properties. Such wave-lengths can be measured with the usual methods of radio. Waves of lengths between 1 and 0.0008 mm. have unfortunately been called heat waves. These waves are detected by their heating action on sensitive electrical thermometers. The wave-lengths of these rays are measured exactly in the same way as all the wave-lengths can be measured in principle, with the help of Young's experiment. In practice, however, the method is improved by using not only two but a large number of slits, a so-called diffraction grating, first invented by Fraunhofer in Munich in 1820 and then greatly improved by Rowland at Johns Hopkins University fifty years ago.

This same method can also be used for short waves. It is useful to introduce for shorter wave-lengths a new unit called an Angstrom, namely 10^{-8} cm, or one one-hundredth of one-

[1] 10^{-12} is an abbreviated way of writing 0, followed by eleven 0's and then 1: i.e. in the twelfth place after the decimal point. 0.000000000001 cm, or 1/1000000000000 cm.

millionth of a centimeter. From about 10,000 A° on, or about 1/10,000 of a cm, the heat waves begin to act on especially prepared photographic plates; from 8,000 A° on, the radiation acts on the eye and is therefore called light; at 8,000 it appears as red light, at 6,000 as yellow, until at about 3,700, where it appears violet, its effect on the eye stops. However, shorter wave-lengths still act on the photographic plate. There is no break anywhere in the properties of the radiation but a continuous transition, i.e., continuous with the wave-lengths. These various wave-lengths can always be measured by the same method, namely determining the difference in distance of the two slits from the first dark fringe; this difference being always just ½ of the wave-length.

As we proceed still further we find the so-called X-rays. It might be remembered that X-rays were discovered in 1895 by Roentgen, working in Würzburg, but that their nature was not known until 1912 when Laue, then at Munich, and a little later Bragg in Manchester, succeeded in using gratings on them. X-rays have wave-lengths from 10 A° down to 1/10 A°, the latter used for therapeutic purposes; the shorter the wave-length or higher the frequency, the more penetrating the X-rays. To get still shorter wave-lengths one must either use extremely powerful machines or the natural, so-called gamma radiation, which is emitted by radioactive substances, by means of which one can reach waves of about 1/1000 of an A°, or waves so short that there are 100,000 million of them in one centimeter. The methods of detecting these, and of measuring their intensity, will be described in the third section.

II

In addition to the wave radiation described before, there exists, however, also a corpuscular radiation, really consisting of flying particles. There are several kinds of these, although until recently only electrically charged particles were known.

To describe these radiations it is necessary first to speak about electric conduction in air, or in gases in general.

Under normal conditions gases are electric insulators. That is to say a charged electroscope if well built, will keep its charge.[2] But it is possible to make a gas an electrical conductor; for example, by using a flame, or by having X-rays, or an electrical spark, pass through it. A closer investigation of what happens has shown the following.

It is possible to separate electrical charges from the gas molecule. If a gas molecule is separated into a positive and a negative part, the positive part will be attracted by a negatively charged electroscope. The negative particle will be repelled by it, and so this electroscope will be discharged. That is to say an electric current is set up in the air which is actually carried by the motion of electric charges, which are therefore called ions. A close investigation has shown that these charges occur always in multiples of a unit charge called the charge of the electron. (Experimental details will be given in a moment.)

To get an idea of the charge of an electron, we might say that if a current flows ½ sec. through a 30-watt lamp, it is carried by about 10^{18} electrons, i.e., made up of 10^{18} electron charges.[3] This charge can be measured directly as described in the footnote.[4] If one now applies an electric field to these charges and removes almost all of the air so that there are no collisions between the charges and air molecules, the charges are set in motion and attain a very high velocity. If they are negative they are called cathode rays. It is relatively simple to investigate the velocity and determine the nature of these

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[2]A simple electroscope consists of two strips of gold leaf or quartz fibre attached together at the upper end. When charged they repulse each other and diverge, their divergence being used to measure the charge.

[3]10^{18} means 1 followed by 18 zeros.

[4]The method consists in having an ion settle on a small drop of oil or mercury and then applying an electric field to this drop so that it will be just suspended against gravity. Then the electric force holding the drop is equal to its weight and if the field applied to the electrodes is known, the charge can easily be calculated.

cathode rays. A flying electric charge acts exactly in the same way as does a flowing electric current. If one applies an electric field at right angles to the flying particles they are deflected (repulsed by the negative and attracted by the positive side). If one applies a magnetic field the path is bent into a circle. This phenomenon is due to the same force that makes an electric motor run, in which case the magnetic field exerts a force on the current in the wire.

It has been found that in all cathode rays the ratio of the charge to the mass is the same, and as we have said and shall repeat, the charge is also always the same, which can only mean that the mass is also the same. Knowing the charge, it is easy to calculate the mass, and it is found to be about 1/1800 of the mass of a hydrogen atom, and is therefore the smallest mass known in a particle. About 10^{27} of these negative electrons would only have the mass of a gram. From the action of the forces mentioned above, one can also determine the velocity and therefore the kinetic energy of an electron, and, as one would expect, one finds that the kinetic energy can be calculated by the work done by the electric forces coming from the electrodes. It has become customary to designate the kinetic energy of an electron in volts. Of course this is not literally correct, because the kinetic energy is equal to the product of the charge of the electron and the potential difference. But as the charge is always the same, this abbreviation is a customary one.

An electron of 1 volt energy (i. e., one on which one volt potential difference has acted) has a velocity of 55 million centimeters per second; an electron of 10,000 volts, a velocity 100 times as large, i. e. 55,000 kilometers per second; an electron of 1 million volts, a velocity within 7 per cent of the velocity of light.

It is not necessary for the present to discuss rays made up of positively charged particles.

If an electron of considerable kinetic energy, let us say of several hundred volts or more, passes through a gas, it strikes the molecules of this gas. A relatively slow electron will

glance off. If, however, the energy gets higher, it will pass through, and the higher the velocity the more easily will it pass through. Accordingly, the penetrating power of cathode rays (or electron rays) increases rapidly with increasing velocity. At 10,000 volts a cathode ray might be stopped by air within a few centimeters; at 1 million volts it might pass through several meters. In its passage, however, it tears loose, from the molecules it strikes, other electrons, and in general gives them some kinetic energy, say perhaps 30 volts. This liberation of electrons results in ionization, or conductivity, of the gas, and the amount of conductivity is a measure of the ionization produced. While the measurement of the latter is a measurement in bulk, it has been possible with the help of the so-called Geiger counter to measure the passage of a single electron. A Geiger counter is a small vessel containing electrodes to which an electric potential is applied. The air in this vessel is insulating under normal circumstances. But if a single electron of high velocity passes through, the air is ionized, and a minute current passes. The modern methods of radio amplification can be applied here, amplifying these currents so that one can hear a crack in an attached telephone for each single electron.

It is also possible to make the path of a single electron visible with the help of the so-called Wilson Cloud Chamber. It is known that water vapor can be supersaturated, that is to say, if saturated water vapor is cooled down carefully it does not immediately condense, because the formation of small droplets is possible only after their surface tension is overcome. The presence of electric charges, however, does just this, and accordingly small drops of water condense around ions. If, accordingly, a fast electron is shot through supersaturated water vapor, it produces ions all along the path and water vapor condenses on these ions forming a string of small droplets which appear as a dark streak on a photographic plate. It is possible to construct automatic arrangements which continuously produce supersaturated water vapor and

automatically illuminate it and make photographic exposures, and therefore it is possible to investigate with not too much labor many thousands of tracks of single electrons. The density of the ions produced, and accordingly the density of droplets, varies systematically with the velocity of the producing electron, and an experienced observer can, from the looks of the track, guess at the velocity.

IV

It was observed by Hertz in the year 1887 that a metallic body charged with negative electricity loses its charge if illuminated by ultra-violet light, and it was afterwards found by Lenard that this is due to negative electrons which are being set free. The phenomena were very complex and could not be explained until Einstein applied the quantum theory to them in 1905. The quantum theory was first proposed by Planck in 1900, when he showed that the experimental results for the emission of light and heat, as depending on the temperature, could only be explained by assuming that these radiations are not emitted or absorbed continuously but only in discrete particles, or quanta. He proved that the amount of energy contained in such a quantum is given by the product of a universal constant divided by the wave-length of light. This startling assumption was strongly disbelieved when it was put forward, but an overwhelming amount of experimental evidence has since accumulated.

Einstein followed the idea through, and explained the results of the experiments on the photoelectric effects in the following manner. Each electron contained in an atom of matter is bound to this atom with a certain potential energy which must be supplied before this electron can be set free. Light of a certain wave-length (if visible, of a certain color) is made up of quanta of a given energy. If these quanta of energy are smaller than the energy necessary to liberate the electron, nothing happens; if they have just the right amount, they can just liberate the electron. If the energy is larger than

required, the electron is liberated and the excess of energy of the light quantum over the binding energy is left to the electron as kinetic energy. This assumption, as applied to the action of light on matter immediately explains the various observations. It explains why if one measures the energy of the electrons liberated by light of different wave-lengths, this energy plus a constant (namely, the binding energy) is inversely proportional to the wave-length of the light, namely equal to the energy of the light quantum. This was proved experimentally by Millikan. It explains further that if one increases the intensity of the light one only increases the number of the electrons set free, but not the velocity of each one, because increasing the intensity of the light means only increasing the number of light quanta without changing the energy of each, since this energy is determined by the wave-length alone.[5]

This law applies also to the inverse process, the production of radiation by moving electrons. In an X-ray tube the X-ray radiation is produced by cathode rays (electrons) being stopped when hitting a metal target. The wave-length of the produced X-rays is determined by the fact that their quantum of energy, which is again equal to the same constant as before, divided by the wave-length, is equal to the loss of kinetic energy suffered by one of the producing electrons.

Accordingly, there is a simple connection between the energy of a quantum and its wave-length on the one side, and the energy in volts of the corresponding electrons produced by it, or producing it, on the other hand; and it is therefore possible to express also the quantum metaphorically in volts. To give examples. A voltage of 2.25 volts corresponds to green light with a wave-length of 5400 A°. Green light liberates no electrons from a metal because most metals hold their electrons with more energy. But a suitably prepared

[5]The correct way to unify this quantum view, according to which the light acts in many ways according to Newton's corpuscular theory, with the wave view, is still in the stage of discussion.

potassium surface might hold an electron with not more than 1½ volts, and this electron might accordingly be set free by green light and receive a kinetic energy of ¾ of a volt.

An electron energy of 12,000 volts corresponds to X-rays of a wave-length of 1 A°. That is to say, these will be produced in a tube to which 12,000 volts are applied, and on the other hand, if they fall on a metal surface they will liberate electrons from this with an energy of 11,995 volts (the binding energy of the loosely bound electrons being about 5 volts) in addition to slow electrons which had been bound more strongly.

Radiations having a wave-length too short to be measured with the help of a grating, as described in the first section, can be determined with the help of this law if they can be made to fall on a substance from which they liberate electrons. The velocity of these liberated electrons can be determined with the help of a magnetic field, as described before. Einstein's law permits the calculation of the wave-length. This method is, however, complicated by one other fact. For very short wave-lengths there exists the so-called Compton effect, discovered by A. H. Compton in 1922, namely the fact that it is possible that a light quantum is not completely absorbed, and its energy completely turned into the energy of a liberated electron, but that it may lose only a part of its energy. If this is the case, the same law applies to this energy, namely part of it is used to liberate the electron, and the rest remains as kinetic energy. of the electron. Accordingly, if it is found that an electron with a certain kinetic energy is liberated by an unknown radiation, the energy transmitted to this electron can easily be calculated as the sum of its binding energy plus its kinetic energy; this sum is either equal to the energy of the quantum after it has been completely absorbed, or it is only a part of the energy of the quantum, if the quantum goes on and has lost energy only partly through the Compton effect.

In general, wave radiation is much more penetrating and less ionizing than an electron ray of the same energy. That is to say, the X-rays produced by cathode rays of a certain kinetic

energy are much more penetrating and less ionizing than the original cathode rays. The reason for this lies in the fact that the interaction with the matter traversed is essentially an electric one, and the electrical field near the charged electron is much higher than the electrical field within the quantum of the wave radiation.

V

As has been mentioned before, sufficiently fast corpuscular rays can penetrate the atom, as had been predicted, by the way, by Father Boscovich, S.J., in 1758. From the deflections they suffer it is possible, with rather elementary mechanics and mathematics, to calculate the forces to which they were subjected inside the atom, and from that to conclude to the distribution of the charges inside the atom. Experiments of this kind led Rutherford in 1911 to a view of the structure of the atom which was made feasible by the application of quantum laws to it by Bohr in 1913, and in an improved way by Schrödinger in 1926. According to this view each atom consists of a "nucleus" which contains almost the entire mass of the atom (mass signifies inertial as well as gravitational mass). This nucleus is positively charged, and its charge is a multiple of the unit charge mentioned before. The size of the nucleus is very small, about 10^{-12} cm or less, and accordingly, the electric field in its immediate neighborhood is enormous. The nucleus is surrounded by electrons. Of course, whenever the atom is not electrically charged there must be as many negative electrons as there are positive charges on the nucleus. In the normal state the motions and positions of these electrons are entirely determined by the electric forces which follow according to the elementary laws from the charge of the nucleus, together with the general laws of motion and the general quantum laws. Almost all the properties of the atom are determined by these processes and the motion of electrons, and accordingly, ultimately by the amount of charge on the nucleus (which is equal to the atomic number

of the element in the periodic system). The proof for this statement cannot, of course, be given here in detail.

The nucleus, however, is not simple in itself. We know something of its structure from two sources: in some cases a nucleus breaks up spontaneously (radioactivity), and in a few others it can be broken up by bombardment with rays of high energy, as first carried out by Rutherford and his collaborators. The breaking up of the nucleus means in general a change in its charge, and accordingly a transmutation of one element into another. While the external electrons, which are more loosely bound, are held with energies corresponding to only a few volts, as I said before, the innermost electrons of the "shell," i. e., the electrons closest to the nucleus, are held with energies up to 115,000 volts in heavy elements. The energies, however, which hold the nucleus together are in the range from ½ million up to 8 million volts as witnessed by the energies of the rays emitted in radioactivity, or necessary to break the nucleus artificially.

I have spoken so far only of corpuscular rays of negative electrons. The only positive rays of high velocity which have been known up to 1933 consisted of stripped nuclei of hydrogen (1 charge), or of helium (2 charges), because larger particles (containing outer electrons) could not pass through the air, and the other atoms held their inner electrons too strongly. Of the recent discovery of positive electrons, that is, positively charged particles with the mass equal to that of the negative electron or 1/1800 of the nucleus of the hydrogen atom, we shall speak later.

While investigating the effects of the bombardment of the nucleus of some atoms by helium nuclei of high kinetic energy, i. e., several hundred thousand volts, two years ago Chadwick and Joliot discovered the existence of neutrons, that is, of particles with a mass about equal to that of the hydrogen atom, but carrying no charge. Because they carry no charge they are affected very little by the matter through which they pass, are very penetrating, and can be detected only because

upon collision they occasionally generate charged particles, for example by breaking up a nucleus which they happen to hit. It is only from a close study of the angles under which these generated particles travel, and an application of the elementary laws of the conservation of energy and the motion of the center of gravity that their certain existence can be deduced. However, it seems improbable that they are of great importance in the study of cosmic rays, and therefore there is no need to discuss them further in this paper.

VI

Heavyside and J. J. Thomson first realized, more than 40 years ago, that a charged particle would need a higher force for a given acceleration than if the same particle were not charged, because a moving charged particle acts like an electric current, producing around itself a magnetic field (this fact can be proved experimentally) and therefore has not only the normal kinetic energy, but also an energy due to this magnetic field. That is to say, a charged particle acts exactly as if it had a higher inertial mass than if it were not charged; this increase in inertial mass being proportional to its electric energy. It follows further that the total apparent mass (namely, the sum of the normal mass *plus* the apparent increase in mass due to the electric charge) would be higher at higher velocities. That is to say the same force would give the particle a smaller acceleration if it already had a high velocity. (In the following sections the word *mass* will always mean inertial mass in the sense of the usual equation of motion; this seems to be identical with gravitational mass both according to experiment and to the theory of relativity.)

This predicted increase in the mass with increasing velocity was soon proved experimentally. In 1904, Hasenoehrl discovered that radiation contained in a vessel apparently increased its mass, because in setting this vessel in motion there is a higher radiation pressure on the back-side than on the

front-side, which meant an increased resistance. When Einstein published the theory of relativity in 1905, all these previous investigations were unified in a single statement which said that any increase in the internal energy of a system meant also an increase in its mass, that is to say, its resistance to acceleration, and its weight. For example, heating a body, or increasing its heat energy, meant an increase in its mass. The relation is: change in energy is equal to change in mass times the square of the velocity of light. In the particular case of heat energy, this change in mass is too small to be measured, because the energy that can be imparted by heat is too small, as a short calculation shows. The equation has, however, been proved by the direct measurement of the mass of very fast electrons. It plays, besides, a very important role in explaining some difficulties in the periodic system.

As I said before, radioactive transformations come about by the breaking up of nuclei, which in this process often emit particles, and the rest of the nucleus forms a new element. Accordingly, one should expect that the atomic weight of the new element is equal to the atomic weight of the old minus the mass of the emitted particles. In fact, however, it should sometimes be lower although the measurements are not yet accurate enough. Sometimes the emitted particle has a considerable velocity, therefore considerable kinetic energy and therefore a higher mass than one would have ascribed to it if it were at rest; in other cases wave radiation is given off which, according to the same formula, with its energy carries mass away also. For example, if we had 1 gram of lead, and if each atom of this lead emitted an electron with an energy of 5 million volts, that would mean a loss of mass through the kinetic energy of the electrons of about 1/40,000 grams, while the "rest mass" of these electrons would only amount to 1/10 of that value. We can now make an estimate of the maximum energy values in the formation of heavy atoms.

The atomic weight of hydrogen is 1.008, the atomic weight

of helium almost exactly 4.000. If the helium nucleus is made up of 4 hydrogen nuclei, there has been a loss of 4 x 0.008 or 0.032 grams (or, more accurately, 0.029) in the formation of 4 grams of helium, which corresponds to an energy loss of 27 million volts, which energy must have gone away carrying the corresponding mass during the process of formation of the helium. This energy might have flown away as kinetic energy, or, more probably, as wave radiation (ultra-short gamma rays). This value of 27 million volts explains why until now it has not been possible to break up a helium nucleus since such high energies have not been available. Similar calculations for other elements explain reasonably why some of them can and others cannot be broken up in the laboratory. Calculations of this kind, together with a review of the other known processes, show that no energy above 200,000 volts seems to be produced by processes outside of the nucleus, and energies up to only a few million volts by spontaneous disintegration of nuclei (radioactivity); while the (assumed, not experimentally realized) building up of some known heavy atoms from light ones might liberate energies up to 100 million volts. To repeat, these calculations are simply made from the differences in atomic weight (mass defect according to Aston) between the heavy elements and the components that might have built up their nuclei.

All the results in physics which we have described up to now have been reached without any reference to cosmic rays. One exceedingly important new result came out of the investigation of cosmic rays themselves, and will therefore be reported later.

VII

In 1903 Rutherford and Cook, then at McGill University in Montreal, and McClennan at Toronto found that even if they shielded their electroscope from all radiations originating from radioactive substances by surrounding it with 1″ of lead there still remained an ionization (conductivity) corre-

sponding to the production of about 2-3 ions per second per cubic centimeter. This they ascribed to a radiation far more penetrating than any known at that time. This ionization was then investigated by Gockel, Hess and Kohlhörster (the first at the Catholic University of Freiburg in Switzerland) from 1909 to 1912, by taking electroscopes up in balloons. They found, to their astonishment, that this ionization did not decrease with increasing height as does the ionization due to radioactive radiations coming from the Earth. The subject was taken up again in 1925 by Millikan and his collaborators, and much work has been done on it since.

To realize how difficult the work is, and why there still exists the possibility of disagreement in respect to experimental results, one need only remember that only one or two molecules per cubic centimeter are attacked per second. This means that one would have to wait one thousand million years until 1/300th of the matter contained in one cubic centimeter would in its turn have been affected.

At present the chief investigations on cosmic rays in this country are being carried out by three schools: Millikan and his co-workers (California Institute of Technology, Pasadena); A. H. Compton and his students (University of Chicago); and W. F. G. Swann, T. H. Johnson, J. C. Street (Bartol Foundation in Philadelphia). They are being studied also by workers in Cambridge, England, and by Hoffmann (Halle), Steinke (Köenigsberg), Bothe (Heidelberg) and Regener (Stuttgart) in Germany. Furthermore, Hess in Austria, Clay in Holland, and others are contributing to our knowledge.

Three methods are available. The electroscope method, which alone can be used for investigations in high altitudes (balloons, whether manned or self-registering, aeroplanes, mountain peaks) and below the surface of water. Secondly, the method of the Geiger counter, described before. Here Johnson has made important progress by improving the use of several Geiger counters, which had first been tried by Bothe and

Kohlhörster. If one arranges two counters, one behind the other, and sees to it that only simultaneous effects are registered, one catches only cosmic rays coming along the direction joining both counters, and can so measure the dependence of the rays on the direction (Geiger counter telescopes). The third method is the use of the Wilson Cloud Chamber which, of course, gives at least in many respects, the most detailed results.

One of the first results of all these investigations was that it was found that the rays, while surely coming from outside the earth, originate neither in the sun nor in the Milky Way because their intensity does not depend on the time of the day or of the year, as it would have to in either case. Secondly, it was found that most of the rays come from directly above, but some come from the sides, thus showing that they can come through the atmosphere from all sides, while no appreciable number come from below. Thirdly, it was found that the intensity increases strongly with the height: at a height of 16.3 kilometers, where only about 1/10 of the atmosphere remains above, ionization is about 100 times as great as at sea level.

To give an idea of the average penetrating power of these rays: at sea level their intensity is reduced to ½ by an air layer of 1,200 meters, or by 150 centimeters of water, or by 18 centimeters of lead. In analyzing more closely the absorption of these rays at different heights, Millikan and his co-workers came to the conclusion that there were several radiations of somewhat different penetrating power. In using the connection which had been found in the laboratory between penetrating power and wave length of X-rays, they gave an estimate of the wave-length of these rays, assuming that they are of the character of X- or gamma-rays; when they calculated the energy of these quanta with the help of the quantum formula, they found it to be so high as to correspond to the energy set free by building up elements such as oxygen or iron from helium and hydrogen (whereby the energy which is necessary for these processes was calculated from the differ-

ences in masses, as described above). However, quite recent discoveries have shown that this extrapolation is not justified, but that the energies have to be even higher than those calculated formerly. This will be discussed in more detail a little later. One very penetrating group of cosmic rays was discovered by Millikan and Regener independently of each other. They have a penetration 30 times as great as that mentioned before. New investigations of Millikan point to the fact that at great heights there are present large amounts of rays of smaller penetrating power, which cannot get through the atmosphere to sea level. Regener has recently found similar results. He concludes that 5 types of cosmic rays with different penetrating power exist. The two softest predominate at higher altitudes.

The problem which is of main interest is the nature of the cosmic rays and the origin of their extremely high energy. The most detailed indication in answer to the first question is given by the application of the Wilson Cloud Chamber, together with a magnetic field; this was first done by Skobelzyn (Leningrad), and later greatly improved by Anderson (Pasadena). The Cloud Chamber showed a number of tracks which were obviously made by electrons of high energy. The latest results of Anderson show that among 37 tracks there were 11 with energies below 300 million volts, 11 between 300 and 700, 8 between 700 and 2,000, 6 between 2,000 and 3,000, and 1 of 5,000 million volts. Counting the droplets and estimating the energy loss, one finds a loss of about 4,000 volts per centimeter which would mean for a particle of 400 million volts a penetration of 1 kilometer in air. This ionization is also in agreement with the average measured conductivity in electroscopes. That the rays producing the tracks we are talking about are, however, not the primary rays cannot be doubted. One finds on the photographs directly that many of them start on the walls of the vessel. If one inserts a thin lead plate in the Cloud Chamber one finds the tracks starting from this plate, where a primary ray, which in itself is not visible (does not

produce condensation of water vapor to droplets) has ejected these secondary electrons.

What then is the primary ray? Before we can discuss this question we have to speak of one very startling discovery, which came out of the inspection of the photographs of the effects produced by cosmic rays in the Cloud Chamber.

VIII

Anderson observed last year that very often there appeared in the Chamber two tracks of similar nature but opposite curvature, obviously starting on the same part of the wall. The direction of curvature of one of them could only mean the presence of a positively charged particle. But the behavior of this particle (amount of curvature of the track and amount of ionization) showed that the particle must be, as far as can be measured, of the same mass and charge as the negative electron, while, as we said before, up to now the lightest positive charge had been the proton, that is to say the hydrogen nucleus having a mass about 1,800 times as large as that of the electron. This observation was confirmed by Blackett and Occhialini in Cambridge. Anderson showed furthermore that the distribution of velocities among these positive particles is about the same as that of the negative electrons mentioned before. Anderson then examined very hard gamma rays, the rays originating from the radioactive substance thorium C″, which have an energy of 2.6 million volts. He found that these too produced such positive electrons. Now, from the detailed investigation, of which we have spoken before, it is certain that these positive particles cannot be present among the electrons outside the nucleus. Accordingly there are only two possibilities: either they must come from the nucleus; or (and that is a very startling possibility for which there are some arguments) we are witnessing here in some respects a "creation of matter."

However, it is only under a certain aspect that one can talk

of "creation." First of all, the total energy and gravitational mass are not changed. The measurement of the kinetic energies of the pair of electrons set free turned out to be 1.6 million volts. Now the "creation" of a pair of particles, each having the mass of an electron corresponds to an energy change of about 1 million volts; so that there is no change in the total mass because, according to Einstein's relativity formula considered before, the gamma ray quantum of 2.6 million volts has just the same mass as the mass of the positive plus the negative electron, both at rest, plus the increase in their mass corresponding to the kinetic energy of the two ejected particles, which is 1.6 million volts.

Furthermore, before this experimental investigation, Dirac in Cambridge, one of the leading theoretical physicists, had published a theory according to which what we usually call "empty space" is filled with negative electrons (this description is very inaccurate, but cannot be made better without the use of mathematics) which do not act electrically. Driving out an electron of this sub-stratum would apparently "create" one negative electron and a hole, which latter would act exactly like a positive electron, and it is thought that this is the process which Anderson was the first to observe. Whatever the truth may be in this most interesting speculation, the fact remains that in the action of very hard gamma rays and cosmic rays there appear, besides the well-known negative electrons, positive electrons of the same mass. This additional action of very penetrating rays on nuclei results in a stronger absorption than could take place in the external electrons only, and for this reason the extrapolation of the former laboratory results connecting absorption and wave lengths is not justified.

IX

We shall now present the different views concerning the nature of the cosmic rays, and the evidence. Millikan believes that the cosmic rays as they enter the atmosphere are photons,

i.e., quanta of wave radiation, which set free in the atmosphere, or in the material which they penetrate, the secondary positive and negative electrons which actually do the ionizing. The tracks observed in the Wilson Chamber, having energies between 100 and 3,000 million volts, cannot be the primary rays because they would never penetrate the atmosphere. There are practically no ionizing tracks of more than 4,000 million volts observable as would be necessary if we had to do with electron rays able to penetrate the entire atmosphere. He interprets, furthermore, the setting free of these secondary electrons as a photoelectric effect in the nucleus and not as a Compton effect. That is to say, on the strength of the experimental results of Anderson with gamma rays, in which almost all the original energy appears in the kinetic energy of the particles, he concludes that each pair of positive plus negative electrons is due to the complete absorption of an original quantum of radiation. Therefore he concludes that the energy of the absorbed photon must have had about the same value as that of the secondary electrons; we have given further back the distribution of the latter values. If this is true, the energy of the photons would also range between 100 million and a few thousand million volts, with at sea level at least 30 per cent below 350 million, and at greater heights even more.

Johnson leaves the question of the nature of the cosmic rays unsolved. He denies that each of the secondary electrons is produced by the complete absorption of a primary ray. A study of the ratio between absorption and ionization of the rays in different materials leads him to conclude that along the primary ray there is a continuous process of production and absorption (through slowing up) of secondary rays; and that the primary ray produces about 90 pairs of secondaries on its passage through a block of iron sufficiently thick to absorb it completely, which would make the energy of the primary ray about 22,000 million volts. This conclusion is independent of the question whether the primary ray is in itself a particle or a

quantum of wave radiation. It is clear that even if it were a charged particle, a primary ray of this energy would not be deflected in a magnetic field. It is not quite clear whether a charged primary particle of this energy would escape observation in the Cloud Chamber.

A. H. Compton has completed a very thorough study of the distribution of the intensity of cosmic rays over the earth and at different altitudes. Such a study had already been initiated by Millikan and his co-workers. The difficulty of such work lies in the smallness of the ionization effect itself and in the fact that one has to find a difference of only a few per cent in spite of the disturbance due to the great changes in temperature and atmospheric pressure which affect the instruments. Now, however, these difficulties have been overcome and there seems to be agreement on the experimental results among all experimenters. It turns out that the earth can be divided into three zones, an equatorial belt, and the northern and southern regions. The intensity is lower in the equatorial belt than in the other two regions. There is a rather sharp transition from one to another, the increase starting near the equator and being completed at about 50° latitude (magnetic latitude). The effect increases with the height, for example at sea level the intensity increases about 14 per cent over the value at the equator; at barometric pressure of 45 cm (altitude 4,360 meters) it increases by 33 per cent.

The importance of these experiments lies in the following considerations. If the cosmic rays consist of charged particles coming from the outside, these must be influenced by the earth's magnetic field which deflects them and directs them into the neighborhood of the poles. Calculations of such an effect have been made by Epstein and recently in much detail by Abbe Lemaitre of Louvain and Professor Vallarta of the Massachusetts Institute of Technology (during Lemaitre's stay last year). From these it has been found that only electron energies between 5,000 and 15,000 million volts give the sharp rise between 10° and 50° of latitude. A.

H. Compton has evaluated his results with the help of the Lemaitre-Vallarta theory, and finds that they are in agreement with the assumption that ⅛ of the ionization is produced by electrons with energies between 5,000 and 13,000 million volts, and that ⅞ of the effect comes either from rays which are not charged (neutrons or quanta of wave radiation) or from electrons of an energy higher than 40,000 million volts, which would not be deflected measurably by the earth's magnetic field. Of course, in this latter case one would have to explain why these rays do not show up in the Cloud Chamber. It is not impossible that electron rays of this enormous energy, which are quite unknown in the laboratory, might not ionize directly. On the other hand, for wave radiations this lack of ionization is known. Much more experimental work is necessary before the question can be decided. Quite recent experiments seem to indicate that more rays come from the west than from the east, which means that their charge must be positive.

X

The general importance of these investigations consists, apart from the problem of the production of positive electrons in which the cosmic rays play more the role of a tool, in a discussion of the origin of their enormous energy. Let us review what we have stated before. Processes in the outside of the atom, which are the only ones with which we normally deal in physics or chemistry, do not involve energies higher than 120,000 volts. The known processes of spontaneous disintegration (radioactivity) do not involve energies of more than 8 million volts; and Millikan has shown by comparing the differences in atomic weight that no step-by-step transformation imaginable which would lead from one known element to another known element can involve higher energies. There is no doubt that the energies of the primary cosmic rays are much higher than this; the question is only how much higher. If Millikan's estimate is right, they should be be-

tween 20 and 500 million volts. If helium is built up in one step out of 4 hydrogen atoms, there is a difference in atomic weight of 0.029 per 4 grams of helium, corresponding to 27 million volts. Similarly, if oxygen is built up in one step out of 16 hydrogen atoms, there is a difference in energy of 16 — 16 x .008 = 0.125 grams per 16 grams of oxygen, corresponding to an energy of 116 million volts. This Millikan interprets as the processes which have provided the energy of the two less penetrating groups of cosmic rays calculated by him. Similarly, he explains the origin of the energy of two more penetrating groups by the formation of silicon and of iron out of hydrogen (220 and 450 million volts).

Furthermore, he concludes from the way in which the ionization behaves at high altitudes, that the rays there cannot yet have passed through much matter (not sufficient secondary rays are present) and therefore that the cosmic rays do not come from the interior of stars where they would have passed through the atmosphere of these stars, but come out of interstellar space. It must be added here that astrophysicists have been searching for quite a number of years for a source of energy of sufficient duration to provide the radiation energy of the stars. No known source seems to be sufficient. It had long been suggested that this source can be found in the energy set free in the hypothetical building up of heavier elements from hydrogen, which might go on continuously at a slow rate.

Of course, if the other estimate is correct, and the energies involved are of the order of 15,000 million volts, this explanation will probably not hold. At present the explanation that energy radiated during the formation of a heavy element is responsible for the difference in atomic weight between the original and the end product has only been used to explain differences small compared with the unit (the atomic weight of 1 hydrogen). To 15,000 million volts would, however, correspond a difference in atomic weight of about 14.

A theory proposed by Jeans and Regener seeks for the origin of the cosmic rays in the disappearance of a proton. If

a positive hydrogen nucleus and a negative electron would rush into each other, thereby annihilating their charge and their mass, the energy set free by that process would go away as radiation and carry with it the mass of the proton and electron which have disappeared. As the mass of the proton is about 1,800 times that of the electron, the energy liberated by that process would be about 900 times that necessary to "create" a positive plus a negative electron in the process mentioned before, that is to say would be about 900 million volts.

There exists another theory for the origin of these rays, proposed by Dr. Lemaitre. His theory of the history of the whole universe ("expanding universe") is that it started from a rather condensed state which "exploded," or as he puts it, that this whole universe, originally rather compact, underwent a spontaneous "radioactive" transformation on a huge scale. This theory, of course, explains why the nebulae, which are very far away, are apparently all receding (this is what is meant by the expanding universe). In his opinion the cosmic rays correspond to the beta and gamma rays, which are emitted in our well-known radioactive sources; they have existed since the beginning of the world, and are so to speak "projectiles" emitted with this enormous energy at the beginning of the universe and flying through space ever since. Dramatically, he calls them the birthcries of the universe.

Pictures of Bygone Life in Russia

PRINCE SERGE WOLKONSKY

ONE of the results of the tragic events that have befallen our country, is the fact that foreigners become more and more acquainted with the products of our past civilization. A whole population, uprooted and thrown outside the frontiers of their fatherland, has brought to other nations its knowledge in science, its skill in industry, its achievements in art. The latter especially—our music, our opera, and our dancing—seem to impress the foreign audiences. We cannot but be grateful for the kind, enthusiastic way they are accepted. Yet often do I wonder whether these artistic productions do not give the impression of disjointed members? Is it not as if you were shown the flowers, the leaves, the branches of a plant, the stem of which remains unknown, so much more the roots, and still more the soil that furthered their blossoming? This is why I thought it would perhaps not be devoid of interest, if I made the attempt of giving, as far as the brief limits of an article will allow, a sort of panoramic view of our cultural development through those two centuries which mostly determined its character and further progress—that is, the eighteenth and the nineteenth.

I

Our civilization, the one in which we have been born, the one that dates from Peter the Great, was not, like that of other countries, a plant of the native soil. It had no real roots in the land; it was like a thing presented on a dish. It wanted

some time before this civilization imposed through the will of a single man should be adopted; it had to be adapted, assimilated, before it could give its own fruit. And yet the rapidity of the progress was marvelous. From the mists of the period of adaptation I recall a picture.

One cold December night, in a village on the bank of the northern Dvina, the door of a fisherman's hut was opened. A boy of sixteen came out, looked around, and with a few books under his arm hastened away on the highroad. This was in 1730: the name of the village was Holmogory, the name of the boy was Michael Lomonossov, the road led to Moscow. Why was he fleeing, and why to Moscow? He did not know exactly, but he had read three books—a Slavonian grammar, an arithmetic, and David's Psalms put into verse—and he felt that beyond these books lay wider horizons. In the port of Archangel, where he used to accompany his father when about to go fishing in the Arctic Ocean, he had seen foreign ships and foreign people, and he felt that beyond the sea there were countries, nations, languages. He had heard, during his childhood, of that emperor who had died five years before and had brought such changes among his people—new dress, new customs, even Russian ships, schools with wonderful learning. Abandoning his father's trade and freeing himself from the persecution of a brutal step-mother, on this December night he fled to Moscow. He joined a caravan of merchants on the road, and in January reached that town where twenty-five years later he was to found the first Russian University. Many years later our greatest poet, Alexander Poushkin, said of Lomonossov: "He was *himself* our first University."

I recall this picture because it is an allegory: that boy, a child of the people, going into the unknown, following the appeal of a civilization which he vaguely guessed. And it is not only an allegory; we may say it is a formula. For the whole ulterior progress of our culture—whether intellectual, or artistic, or social—was the encounter of these two currents:

the imported thing coming from the outside, and the thing that springs out of the soil.

It is about that time that the culture in Russia begins keeping pace with occidental Europe. This, of course, in a very superficial sense at first. The *forms* are the same. The Court imitates Versailles; it is the style of Louis XV; later on that of Louis XVI. In literature it is the pseudo-classic tragedy, and the encyclopedians, and above all the literary authority of Voltaire. Our poetry of the eighteenth century, pompous, sonorous, was the trumpet that proclaimed the glory of the empresses, the victories of the Russian armies, the births of imperial princes. Always adapting the classical tradition to the circumstances, the poets show us nymphs bathing in the streams of the Neva, Boreas blowing on the Baltic shores.

All this borrowed mythological attire is not deprived of a certain beauty and grandeur. But what a queer mixture, and how little all that was a product of nature! All that has no more root in the soil than the wigs on the heads of courtiers. And what a strange mixture it produced in the encounter of new fashions with old habits! Those sons of great families who went to Paris in order to pay their respects to Voltaire, and who, when home again, accommodated themselves so easily to the abnormal conditions of servitude. That funny mixture of servants in gorgeous liveries and little peasant-girls running about barefoot on the precious carpets of sumptuous apartments. At a court ball the Empress Elisabeth, daughter of Peter the Great, notices a lady who dared to adorn her powdered headdress with a flower like the one she wore. She orders a pair of scissors to be brought, and with her own august hand she cuts off the impertinent stem on the other's head.

II

In our eighteenth century we must distinguish two influences. First, under Peter the Great, it was Dutch influence. The young sovereign adored the sea; he had made

incredible efforts to conquer the shores of the Baltic and to secure to his country an outlet on the Black Sea. After having taken possession on these two shores, it was the fleet that became mistress of his thoughts. It was on this occasion the Dutch artisans became his friends, his instructors. And people saw this unheard-of thing: a sovereign who with his own hands could build a man-of-war. When two German princesses in Berlin, the Electress of Hanover and the Electress of Brandenburg, asked him what was his favorite occupation, for answer he showed his calloused hands.

In the next generation it was the French influence. Perhaps the succession of several women on the throne furthered the relaxation of the energy which had been imparted to life under the impulse of Peter the Great. However it be, the sons of those who had been to the school of Dutch wharves preferred the school of French drawingrooms, barber shops and restaurants. It was by way of frivolities that French influence entered our society in those days; it was smoothing away on the hands of the sons the inheritance of the Dutch callosities of which the fathers had been so proud. Fêtes, masquerades, fireworks, and in the first place theatricals. Even military schools at certain seasons became a sort of dancing academies; the cadets performed at court, the empress herself took the greatest interest in all details of decoration, costumes, the make-up, etc. In the tittle-tattle of this pastime only a few received French influence by the channel of thought. Among these was the wife of the heir to the throne, the young grandduchess Catherine. "If I have a notion of anything," she writes a few years later to Voltaire, "I owe it to you."

In order to give an idea of the rapidity of assimilation which I think is a characteristic of our race, the following story is pertinent. The Count Rozoumovsky, through his brother, brother-in-law of the Empress Elisabeth, one day, inspecting his Palace, opened a cupboard in the apartment

occupied by his son. Great was his amazement at the luxury of his wardrobe; of waistcoats alone there were something like seven hundred. He took his son to his working room, and opening an old cupboard: "This is what I used to wear when I was of your age," he said. And he showed him a felt hat, one of those worn by our peasants in the south, a pair of sandals twisted of lime bark, a stick and a shepherd's flute. The young man answered: "What was good for the son of the shepherd Rozoum cannot do for the son of the Count Rozoumovsky, President of the Academy of Science, etc." The one who made this proud answer was later on a diplomat. His beautiful house in Vienna was the meeting-place of all musical celebrities; old Haydn used to play at his gatherings and to this same Rozoumovsky, Beethoven dedicated three of his quartettos.

I have mentioned that his father was brother-in-law of the Empress Elisabeth. How came it about that an Empress could have married a shepherd's son? This is not the only fairy tale of our eighteenth century. South Russia was always famous for its beautiful singers. One day in church the Empress was impressed by a wonderful voice. Very sensitive to music, she was no less sensitive to the impression made upon her by the newly recruited singer of her chorus. The young Rozoum was covered with honors, his proletarian name of Rozoum was changed to Count Rozoumovsky, his family was sent for and received at court. And this is how it happened that the Empress Elisabeth, daughter of Peter the Great, married a shepherd's son.

A fine story is told about him, which depicts his high character. When, in the next reign, Empress Catherine thought of marrying Orloff, she sent one of her Ministers to old Rozoumovsky with the order to ask him on her behalf whether he could let her see the official documents of his marriage with the Empress Elisabeth. She meant to raise him to the rank of Imperial Highness, thus creating a precedent for him whom she intended to marry. The old man, when he

had been told the Empress' desire, got up from his armchair, took a box which stood on his writing table, unlocked it, brought forth a packet of documents, read them over, kissed them, wiped his eyes and threw the whole lot into the fire. "I have never been anything but the humblest of Her Majesty's subjects. . . . Go and tell what you have seen and heard."

III

In a few rapid lines, such is our eighteenth century. Such it remains in our art productions of the time. I stress especially the breath of glory, of triumph, which animates the pictures, portraits, sculptures, medals and the poetry of that period. Everything becomes as if it were a page of poetic annals, and, above all, a celebration of Catherine the Great. This sovereign succeeded in surrounding herself with a marvelous entourage. A German princess, she identified herself with her new country to the point of forgetting her origin. One day, as the representative of the King of Prussia presented his condolences for the blood-letting to which the doctors had thought it necessary to submit her, she said: "It's nothing, just a good occasion for ridding me of my last drop of German blood." A great sovereign, in fact, who, inspiring herself with the genius of her time, infused it in her contemporaries and not only implanted in her country the best specimens of Italian and French art, but called forth a national blossoming of architecture and painting which, from the point of spontaneity and harmony, has never been surpassed. She could draw the national forces from beneath the earth to the surface. Its sources obeyed her command. This side of her personality—not to speak of her personal talents, the great scale on which she carried on her diplomatic intercourse, the superior qualities of her helpers, the successes of her armies —is certainly more interesting and better worth remembering than the one that people like to indulge in with a certain winking of the eye.

IV

We approach the nineteenth century; let us stop on its threshold.

It was in the spring of 1815. A great excitement reigned among the pupils of the Lyceum,—the high school annexed to the suburban Palace of Tsarskoye-Selo, that high school which gave so many prominent men in different branches. A bit of news was spreading from one to another: old Derjavine, the great poet of the eighteenth century, was coming to assist at the examination. He came, the venerable poet—white-haired, bent under his seventy-two years. He took the seat of honor. He was drowsy from weakness until the examination in Russian literature began. Then he awoke. The subject at the time was not very complicated: the pupils mostly were speaking of him; declaiming his poems. His eyes became bright, his face was illuminated, he was transfigured. A youth steps forth: his hair curls like that of a Negro, his lips are thick, his eyes are living coals of fire; there is something African in his face. He is introduced as a young poet. He is asked to recite some of his verses. Later he writes:

> I told my Reminiscences of Tsarskoye Selo standing at two paces' distance from Derjavine. I cannot describe the state of my soul. When I came to the verse where I mention Derjavine's name, my boyish voice resounded, my heart was beating in wild ecstasy. I do not remember how I finished, where I fled to. Derjavine was transported; he asked for me, he called for me, he wanted to embrace me. They looked for me, they did not find me.

"My time has come to an end," said Derjavine a few days later, "another Derjavine shall reveal himself to the world, one who still on the school-bench has surpassed all other poets."

Under such an omen life was begun by Alexander Poushkin. His name rose like a sun that was never to know sunset. Many years later, on the zenith of his fame, he remembers the meeting and, in speaking of the first success of his youthful Muse, he wrote: "The world greeted us with a smile; old Derjavine

noticed us and on the edge of the grave gave us his blessing." For my part I never can think of this encounter without recalling to my mind those words of Emerson: "The birth of a poet is the principal event in chronology."

At this moment, always in accordance with Western Europe, the sun of classicism begins to sink; the sentimental breezes, after this the romantic wave, caress the heart. A novel of little importance, although sprung from the pen of our great historian Karamzine, called "Poor Lizzy," well describes the new feelings. It relates the story of a peasant-girl who, deceived by the promises of a Moscow dandy, puts an end to her days by drowning herself in a neighboring pond. Ladies undertook pilgrimages to dream on the banks of "Lizzie's Pond," or to cut their names on one of the neighboring trees. It was the epoch when tears were easily shed over the fate of a fading rose or of a captured butterfly; it was the time when the harp had become the confidant of women's sorrow. A word sometimes says more than a description, and I remember my great-grandmother saying to her granddaughter, my mother: "You know I was not exactly pretty, but I touched the harpstrings very prettily, I had arms that were those of a statue, and in the eyes that certain mystery that pleases men."

V

A few words on the exterior frame of life at the time. It is a thing worth noting, that, while in Western Europe romanticism had appropriated to itself the Gothic style, in Russia it attained its full development in the midest of the so-called "empire." This monumental style, anything but dreamy, found in our country a very striking development—due probably to the big lines of our public places and the breadth of our avenues. This style had such a vogue that even some churches of the time were adorned with military emblems and had antique tripods on the four corners of their roofs. It became the favorite style, and even in the remotest country-

residences it was empire furniture, empire china. All that continued long after the fall of Napoleon.

Another thing is worth mentioning: the importance that the figure of Napoleon took in the poetical imagination. It is really fine, that enthusiasm for him who had been an enemy; it is beautiful, that oblivion of injuries, the oblivion of the invasion, the minds that want to keep the memory of the *hero* and celebrate him in the most beautiful verses. In speaking of St. Helena, Poushkin says: "Before the urn in which thy ashes repose, the hatred of nations lies appeased, and the flame of eternity shines." Our poets have all disdained the "hatred of nations," and preferred to remember "the flame of eternity." The tragic splendor of Napoleon's figure, as it appears in the verses of Poushkin and Lermontov is certainly one of the finest homages paid to the great man's memory. No wonder that from poetry the image passed into the plastic arts, incorporated in painting, in bronze, in marble, in porcelain. In describing the working-room in the abandoned country-house of Eugen Onegin, in his poem of the same name, Poushkin does not forget to mention on the writing table the little column bearing the bronze image of the man with crossed arms and with the somber forehead under the tricorn-hat.

Another thing we must underline is the fact that Napoleon's invasion did not in any way change the French character of education in Russia. In what one used to call the upper classes the governesses and the tutors were French (also Swiss). The French emigration at the time of the great revolution brought a number of people who entered into families as teachers; among them the brother of Marat, who did not share his brother's opinions and even changed his name into that of his native town Bodry. Later on, the Campaign of 1812 left some remnants. I remember having met in Saratov an old Frenchman who had been drummer in the Great Army; he taught arithmetic in a primary school.

The letters of the time are mostly in French. It is in French that parents, especially mothers, spoke to their children. There

was a governess in our family in the first half of the last century, a Melle Calame, aunt of the famous Swiss landscaper. She used to say that during the forty years she had spent in Russia she had heard Russian spoken only by servants. Yes, our grandmothers learned their mother-tongue from servant-maids; this is how it came about that ladies who were the flower of distinction often used expressions of deplorable vulgarity. Poushkin himself in a letter to his friend writes: "I am going to speak to you the language of Europe—it is more familiar to me." And, on another occasion, describing his pastimes in the country, he says that after dinner he listens to the stories and popular songs his old nurse is singing to him: "Thus," he adds, "I am filling in the gaps of my damned education." The Russian literature owes an eternal gratitude to the old nurse of our great poet for all the treasures of popular speech, fairy-tales, legends, songs and proverbs which, through her, passed into poetry.

And let me say here a word of that wonderful product of our people,—the old nurse, the Russian *niania,* the village woman who had nursed our fathers and grandfathers and great-grandfathers. What treasures of devotion; in her illiteracy how much wisdom, in her rural simplicity how much feeling and what charm of manners! That was the real contact with the people, this was the real link. No wonder that the present masters of our country declare war on the "nurse" and endeavor by way of censorship to suppress the very word. My own compatriots of the younger generation cannot imagine and will never know what is was, that nurse who continued her functions through generations and by and by became a member of the family. And this, at the time of servitude! Now, without entering the ground of the great social problems, how is it possible not to state that amidst darkest realities sometimes beautiful flowers blossom and, on the other hand, amidst the greatest principles proclaimed with bumptious words, often the most hideous realities triumph.

As we have mentioned Napoleon and the Campaign of

1812, let me tell you that we had a distant old relative who lived to the age of 99. This old lady died in the 'seventies of the last century, so of course she perfectly remembered the year twelve. When she was asked about some event of bygone days, before answering, she used to say: "Let me see—was it before or after the French?" This old lady had lost her father in early days of her childhood and had been brought up in her uncle's house, who had a daughter married to a Count Tolstoy who became mother of Leo Tolstoy. Thus the old lady of whom I speak was an aunt of the great writer. The latter period of her life she passed in a little house which she built close to the village church which had been erected by her grandfather. There, surrounded by old women, like herself, she had read and re-read to herself the first chapters of Tolstoy's "War and Peace." All those people the writer speaks of in the first part of the novel, she had known them all, she had grown up among them. She kept for them all a kind memory; only one person found no mercy in her judgment, this was the French governess, Mlle. Bourienne. "Oh, that Bourienne"—she used to exclaim—"a viper, a real viper!"

The days, the years glided away and their monotony was broken only by the regular return of the old princess' birthday. She had become very poor, and the peasants on this day used to bring her some eggs, hens, some linen woven by themselves, and on the day she was ninety—the lady told it herself to a traveler who stopped in the village for an hour to give his horses rest—on the day she was ninety the peasants presented her a silver rouble! She told it with pride, but not for herself, but for that memory which the peasants faithfully kept of her parents. One sunny morning the bells of the village church were ringing gaily, convoking the inhabitants for a thanksgiving service on the occasion of the old lady's ninety-ninth birthday. In the middle of the service the news was brought that the princess had expired. The thanksgiving canticles

gave place to the funeral litanies. Two days later the coffin was carried by the peasants to its last resting place.

To carry the coffin in the arms was an old custom. It is to be noted that it never had been a compulsory homage, it has always been spontaneous. For instance, I know the case of a landlord who died in Moscow—his peasants had come the great distance of a hundred and fifty kilometers in order to carry his coffin in their arms, and they had made a vow of silence for the whole duration of the funeral journey. Similar facts are worth being recorded as a proof that, in spite of the servitude, a moral bond existed between the classes. And may it not be better when class differences are smoothed down by way of education than by way of hatred and destruction? Here I want to say a word about another kind of a link which existed not in spite of but just because of the conditions of servitude.

It is not much known outside of our country, that there existed in Russia a branch of art known under the name of "serf-art." Before the emancipation in 1861, the landlords employed on their properties a staff of workers in all kinds of applied art. Thus, they not only had their carpenters, their bootmakers, their weavers, but they had their own musicians, their painters, many of them had important china-factories, etc. Little girls from the village learned the art of embroidery; houses were adorned with tapestries which represented Turks with curved swords, odalisks fainting in the arms of brigands, fantastic landscapes, ruins, "temples of love, of friendship," "bridges of sighs," etc. Later on, modern Greece offered romantic subjects of heroism. It is rather amusing to think that there was a breath of Byronism in the needles of these little peasant girls. The taste for exoticism which in Western Europe lured the imaginations towards China or Africa, exercised itself in Russia on the Caucasus: the beautiful Circassian girls in silk trousers and tiny shoes, the fierce Circassians with their fur bonnets and their chests

covered with cartridges. All that art, which sprang up in the residence of the landlord, not in the village, is one of the most characteristic and interesting features of our culture.

It was not, however, always confined to the place of its birth. Many of those "serf-artists" made a fine reputation. Called to Moscow or to Petersburg, they made serious studies and many became famous artists. Unfortunately their fate depended too much on the moods of their landlords. Thus one of our best portraitists, Tropinin, had to practise in his youth the art of pastry. Another, though exercising the art of portraitist, went on filling the duties of footman; and often he shut the door of the carriage for some important personage who the day before had sat for him.

The emancipation of the serfs, proclaimed in 1861, if it did change the civil, juridical and agricultural situation of the peasant towards the landlord, on the other hand opened a greater field for industrial exchange; the collaboration of the landlord's house with the village was only temporarily shattered and towards the 'eighties it started anew on a much bigger scale. All categories of what is known as "rural art," —tissues, embroideries, lace, woodcarving, ceramics—all became an object of careful study and found a special protection on the part of our ladies. Ancient models were looked for in convents and villages. Museums were founded, illustrated catalogues published, exhibitions were arranged, shops installed in bigger centers, commercial relations established with other countries. I know a lady whose peasant-women every year took part at some show abroad; she kept the diplomas; but with what pride the medals were exhibited in the village on Sundays! All this is a kind of activity in which personality and private initiative takes so great a part that we might speak of legislation, statistics, percentages, averages and the kind of things that Committees are so fond of. Yet, in order to show that it was not a ladies' game, it suffices to show that towards the end of the last century a whole ministry had to be created in order to systematize the results of that

formidable voluntary activity. This side of feminine activity will probably never be appreciated at its true value and in its whole volume. Add to this the teaching and medical activity, and you will have an approximate idea of what the culture of our country owes to the women of our country.

All that is not only ignored, it is intentionally trampled upon by the present rulers of our unfortunate country. The same hatred prosecutes and pushes into oblivion the admirable activity of the representatives of the old merchant-families of Moscow and other centers. There is no branch in which they have not left institutions which would be the pride of any civilized country: hospitals, universities, technical schools, museums, theaters, all founded and endowed by private initiative. Who ever remembers them now? Our generation once disappeared, who will even remember their names? Does one still remember that it was the manufacturer Mamontoff who put on the stage Rimsky Korsakoff's operas, long before they had been incorporated in the repertoire of the Imperial Theaters? He did more—he created Chaliapine. It is known that Morozoff, another manufacturer, brought together one of the finest collections of Cézanne, Van Gogh and Renoir, and that Schoukin, the well-known merchant, collected the finest Matisses and Gauguins. And those unfortunate young men who nowadays come to Moscow in search of learning, who find neither food nor bed, do they know that there has existed in Moscow the so-called "Liapin Institution," a huge house where any student of any category was sure to get gratis a dinner and lodging. If these names are still pronounced it is with the intention of handing them over to coming generations with the hateful epithets of "blood-drinkers," and "vampires of the people."

VI

All I have written is the past; a past that no longer exists, not because, as in other countries, it has evolved into other forms; but no longer exists because it has been killed, annihi-

lated. The threads of a possible evolution have been cut. I said at the beginning that I would try to give a panoramic picture of our past. Whether I have succeeded or not to make it sufficiently highly colored, the subject itself appears to me as one of those vanishing pictures which appear on the screen and disappear when the lamp is extinguished. Yes, the lamp *is* extinguished; we light it only in our memories. Yet by the very fact of its being dead, the past is still dearer to us than when it was alive. This is why I thought that my reminiscences might have the chance of being of interest. It is not your past. Yet the doleful way by which a portion of the great human family acquired its national conscience and the conscience of its universal solidarity, is always an honorable book; its pages contain glorious names, examples of virtue, and lessons that command respect. The life that breathes in those pages—I mean the most precious elements of life, love of justice, pity, charity, courage, self sacrifice—have the power of moving us, anywhere, at any time, in any nation—still more so in the case of unhappy nations than in that of happy ones.

The Hindu Approach to Christ

A. J. SIQUEIRA, S.J., M.A.

FROM Tiger Hill, Darjeeling, on the Himalayas, five countries are visible, of which four—Tibet, Nepal, Sikkim, Bhutan—are closed to Christianity. India alone is open. Between 50 and 100 million souls are thus cut off from the Gospel. In India, as we know from the recent census, some 7 out of 350 millions are Christians, that is, two per cent. In spite of the apostolate of St. Thomas, the success of St. Francis Xavier, and the labors of countless missionaries, Christ has not touched the heart of India.

Why is not India Christian after all our efforts? Six times have we tramped about this Jericho with our preaching, our schools, our hospitals, our literature, our philanthropy and our social reform. Have we not sacrificed and spent and toiled? No generation has ever given itself as our generation. There are no finer missionaries than those in India. And yet they say, "Christ" —but not "Christianity." They give us credit for our vast and manifold efforts, but they come no further. Instead they attempt to match our preaching with their preaching (using texts out of their own sacred books), our schools with their schools, our medical and philanthropic institutions with theirs, our literature with their literature, our propaganda for social reform with theirs. On the surface it seems an impasse. Jericho does not tumble, waiting for some seventh circuit with its conquering shout.[1]

Apart from the difficulties arising from missionary methods, there seems to be an obstacle to Christianity in the religion of the people, a barrier as insuperable as the Himalaya Mountains. We do not deny that there is a growing interest

[1]Our Asiatic Christ, by Oscar MacMillan Buck, p. 138.

in Christ. Dr. E. Stanley Jones cites a Hindu principal of a college who said at the close of one of his addresses:[2]

> Jesus is lighting up the soul of India as the sunrise first strikes the high peaks of the mountains and then gradually the light sifts down into the valleys. He is lighting the finest among us, and the light is gradually permeating down through to the masses. And we are glad to be conquered by that light.

But Professor D. R. Bhandarkar of the Calcutta University is not quite so glad when he writes:[3] "What is worse, the ranks of Hindu society are being thinned away by the fervid missionary fervour of the rival religions, Christianity and Muhammadanism." Dayanand Sarasvati, Keshub Chunder Sen, Ramakrishna Paramahamsa, Swami Vivekananda, were lovers of Christ. Thus:

> Keshub, though a Hindu, caught sight of Jesus as the Incarnation of what India craved and needed. He shook the soul of Bengal with his throbbing clarion call to follow Jesus out of darkness to light and out of chaos to freedom. Dr. Stanley Jones says: He became a prophet—almost. He almost says the word, but he inwardly hesitated. Who is Jesus? He calls Him "the God-consciousness" instead of God, calls Him "subjective Divinity" and not "objective Divinity," but *the word* never came out. . . . Keshub was the prophet of the Almost Divine Saviour—but only almost.

These lovers of Christ remained Hindus because they loved Christ in their own way which is a Hindu way; and the Hindu way is ringed round with a fourfold hedge.

I

First comes the outer insulating fringe: the indifferentism which argues: "God is so good and merciful; He could not have appointed one only path of salvation. All religions lead to God and are equally good. Why change?" This attitude is considered to be "a breadth of outlook." Mahatma Gandhi has said: "My religion has no geographical limits." As far

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[2]Christ at the Round Table, p. 178.
[3]*Calcutta Review*, October, 1933.

back as 1908 he wrote in *Hind Swaraj*: "Religion is dear to me and my first complaint is that India is becoming irreligious. Here I am not thinking of the Hindu and Mohammedan or the Zoroastrian religion, but of that religion which underlies all religions." Indifferentism is strengthened by the nationalism, wrongly applied to religion, which bans Christianity as a foreign import to be boycoted. Dr. Buck records a Hindu lawyer's words at one of his meetings:[4] "We cannot possibly make any objection to such a Person [Christ] or such teaching. But it is not thus that India has learned Christ. He has been brought to us dressed in the clothes of Western imperialism."

The *Sanatana Dharma* constitutes the real bulwark. It is the eternal, orthodox Hinduism, according to which, "the entire world belongs to one order, and is sustained and governed by one set of laws, which are both physical and spiritual."[5] It has a vague idea of faith--not the firm intellectual assent to a Divinely revealed truth on the authority of God the Revealer, but just an attitude of mind relying on the evidence of the senses and on the experience and inner consciousness with which Modernism has familiarized us. Dr. S. K. Das said:[6]

> Likewise one can subscribe to dogmas without being a dogmatist. A dogma works not by mechanical dictation but by illuminating inspiration—not by annexing or annulling the rights of private judgment or mysticism but by giving ungrudging recognition to these. Dogma is thus experience in the making, and faith or belief which has an air of dogmatism, to begin with, is but reason cultivating itself. . . . This is typically illustrative of the spirit of Hindu orthodoxy which, though depending in the end upon a provisional faith, employs a faith that *enquires*.

This explains why Hinduism is the most difficult thing to define; some say: "It is enough if you are born of Hindu

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[4]Our Asiatic Christ, p. 6.

[5]Prof. N. Venkataranam in his Presidential Address at the Seventh Indian Philosophical Congress.

[6]In his address, The Spirit of Indian Philosophy, at the same Congress.

parents and have not been converted to another faith." For Gandhi, Hinduism is just "a search after truth through non-violent means." So defined, Hinduism ceases to be *a* religion or *a* philosophy. Consequently, instead of a deposit that is fixed and sealed, to be firmly guarded—*depositum custodi*—though its rich content be more fully appreciated in the course of centuries, the Hindu "revelation" progresses and evolves, each one contributing his mite. Thus the *Sanatana Dharma* finds room in its ample, absorbent bosom for all doctrines. Many religious movements have risen up to oppose it; Buddhism and Jainism, for instance; it has absorbed and outlived them.

This broad-bottomed, eclectic comprehensiveness is most noticeable in the reform movements of recent times, such as the Brahmo and the Arya Samaj, the Ramakrishna Misssion, which have not hesitated to borrow from Christianity and Islam.[7] In their treasury of old and new doctrines and practices they try to find a parallel or a substitute for whatever Christianity offers them. Dr. Stanley Jones asked a Hindu judge, an authority on Hinduism, "Who is a Hindu?" "You can believe anything and be a Hindu," he replied, "anything from pantheism to atheism." "Yes, I know; but where does the Hindu end and the non-Hindu begin?" "Well, you can believe in anything, provided you do not reject the rest," was his final statement. He put his finger on the genius of Hinduism, for it absorbs everything, good, bad, and indifferent, and rejects nothing. Even concerning those religions outside itself, it says that they, too, are ways to God.

But there are Hindu doctrines that run directly counter to Christianity. According to the doctrine of *Karma* and transmigration, man has no need of a saviour because each one must atone for his own sins in successive re-births, until he attain *mukti,* release or salvation. By the law of *Karma,* in

[7]Cf. J. N. Farquhar's Modern Religious Movements in India.

an endless series of reincarnations, the soul reaps what it has sown in one life in the form either of misery or of blessing in a future rebirth.[8] Transmigration is deduced from the law of *Karma,* though it is partly a hypothesis made to explain instinct or *Samskara.* As it lies within the power of every man to transcend the sphere of *Karma* and obtain liberation, Redemption ceases to have any meaning. Prafullapran Changkakti writes:[9]

> The Christian doctrine of Atonement in the person of Jesus who sacrificed his life for the sake of fallen humanity is opposed to the law of Karma. The Hindu finds it difficult to subscribe to the proposition of one man suffering for another man's sins, as it makes the moral order of the Universe unreal by keeping men under the happy illusion that however much they may go on sinning, they would be ultimately saved by the saving grace of God.

Sir S. Radhakrishnan lends this statement the weight of his philosophical authority:

> That one should suffer for another's sins is intelligible, whatever be its validity. But does not the situation become paradoxical, if not grotesque, when the sinner complacently accepts that another should suffer for his sin? The view deludes the unthinking into the false notion that they might continue their careers of crime, for God would some day send some angel or Son of His to bear the sin of the world. The way in which orthodox Christian doctrine regards the suffering and death of Jesus, the guiltless victim, is conceivable, only if God were a well-made weighing machine.

Again, Hinduism acknowledges many messiahs—messengers sent from God — Confucius, Buddha, Mohammed, Ramakrishna Paramahamsa, Swami Vivekananda, even Mrs. Annie Besant, and falls down in *guru*-worship before them. An eye-witness relates an incident which happened in Madras. Mrs. Besant had been interned for some time by the Madras Government on account of some local political disturbance. One morning news spread over the town that the Grand Old Lady had been released and was returning to her theosophical headquarters at Adyar. A procession was organized: *"Vande*

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[8] The Buddha and the Christ, by Canon B. H. Streeter, p. 45.
[9] *Calcutta Review,* April, 1933, p. 58.

mataram" and *"Besant Devi ki jai"* filled the air. At a certain place in Mylapore the procession halted; priests from an adjoining temple were seen to approach the triumphal car. Lo and behold, the temple priests started burning camphor and incense as they do before their gods in the temple. The explanation of this act of divine worship bestowed on Mrs. Besant was: she is an avatara come to save India from the sway of the British Raj!

Christ is one of many; He is made to mingle with the other messiahs in the Hindu pantheon. A Sanatanist writes:

> We believe Christ to be one of the greatest teachers of the world, but not the only teacher. God in His infinite power and mercy sends down such Teachers in all ages and in all great nations who are prepared to receive them. The teachings of Christ and Krishna in the Gita are very much alike. If this view of the Hindus is accepted by our Christian friends, we will embrace them and their religion in all sincerity. This is the only hindrance—"

No little one, indeed! "Is it necessary for the sake of accepting Christ to abjure or renounce all the other prophets of India?" asks P. K. Sen:[10]

> No. No. For then would Christ come to destroy. Gautama Buddha and his message, Yogacharya Krishna and his message, Sree Chaitanya and his message of Bhakti—all came from God and came to stay. So did all the other prophets of the world. And Jesus came not to destroy but to fulfil. It is in the harmony of these that the salvation of India consists and not in the destruction of any.

No wonder that Keshub Chunder Sen could say: "My Christ, my sweet Christ, the brightest jewel of my heart, the necklace of my soul—for twenty years have I cherished him in this my miserable heart"; and still continue to be a Hindu. Christ was *one* of many jewels.

In the same way the Sacred Scripture is set alongside the *Sruti,* the Vedas, the Koran, and the rest—all equally revealed and true. Gandhi writes: "I shall even go to the length of rejecting the divinity of the most ancient Shastras, if they do

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[10]India's Response to Christ.

not appeal to my reason." And Professor A. R. Wadia's comment on this was:[11] "And yet this is done not with the arrogance of a mere rationalist, but in the spirit of a humble devotee, who does not believe in the exclusive divinity of the Vedas, but recognizes the Bible and the Koran and the Zend Avesta to be 'as much divinely inspired as the Vedas.'"

Moreover, God is in every man, therefore also in Christ, though (the Hindu allows) in a greater degree. Christ is man, not God. In the article already mentioned, Prafullapran Changkakti explains it thus:[12]

> The Hindu says: God is everywhere. He is present in all things though according to degrees. As Sir S. Radhakrishnan puts it: Hindu thought is not afraid of asserting the presence of God in all things. It has no faith in a transcendent God distinct from the world, living in a monotonous solitude of His own. The Vedantic formula *Tat tvam asi* (that art thou) is not to be interpreted as gross pantheism. It only points to the essential unity of the self with Brahman, to the divine origin of man in whom the divine spark shines at all times and under all circumstances.

This is easily understood if we remember that most systems of Hindu philosophy hold immanent evolution and not transcendent causality and creation *ex nihilo*. The union of the divine and the mortal in the persons of Jesus, Krishna, Buddha, Mohammed and many other saints clearly shows that there is a community of nature between man and God. The man who lives in God is not afraid of identifying his personality with that of God and saying: "I am Brahman" and "Brahman is I." Hindu Pantheism leaves no room for Christ. Yet the *Gita* says: "For whenever there is a decay of the law, and an ascendancy of lawlessness, then I create myself. For the protection of the good and the destruction of evil-doers, and for the establishment of the law, am I born age after age." Mr. George Howells of the Serampore Theological College comments on this text:

> The fundamental thought of this passage clearly is that God imparts

[11] Presidential Address, Sixth Ind. Phil. Congress.
[12] *Calcutta Review*, April, 1933.

Himself to men from time to time, becomes incarnate as man, so that men may be saved from sin, and find their eternal refuge in the Divine. . . . Both the Gita and the New Testament seem to entertain no doubt as to the possibility of incarnation. If there be an impassable gulf of difference in nature between God and man, then indeed incarnation is inconceivable; but if there be kinship between God and man in the sense that God is the all-perfect personal spirit, a living conscious personality, as the Gita and the New Testament represent Him to be, then the idea of incarnation is by no means in itself incredible. . . . The Gita speaks of successive incarnations, but the New Testament speaks of one. Yet the Christian Scriptures by no means think of Jesus as the only human representative of God upon earth. He is rather the culmination of the self-revelation of God in human life. . . . The Incarnation of Christ as set forth in the New Testament is not the absolutely isolated event it is sometimes represented to be in certain phases of a superficial Western theology.

Ramakrishna has expressed this same thought in characteristic Oriental fashion:

The diver-bird swims on the surface of the water; then it dives down and comes up again at a different place: so God comes in the world and then disappears again to reappear in a different age at a different place. Whenever He appears, He comes as an Avatara, a Saviour of Man. All these Avataras are different manifestations of the One Spirit. We do not believe that God incarnated on earth only through Jesus; but we heartily accept Christ as one of the Sons of God.

The impregnable wall made up of these materials is further reinforced by rationalist bricks. The Christ presented to the Hindu is often the "dissolved" Christ of rationalism, and the caricatures of Harnack, Renan, Loisy, Sabatier and Emil Ludwig are better known than the Gospel portrait. We know their arguments: Christ did not claim to be God; the Gospel texts are either unhistorical or unauthentic; the supernatural does not exist and miracles cannot be; St. Paul deified Christ, and so there has been an evolution of Christ.

III

Our purpose has been to analyze the philosophical and theological complex of the Hindu mind in its attitude to

Christ. Hinduism has no infallible exponent, no official interpreter, no authentic "catechism" of doctrine: *quot capita tot sententiae.* So we have drawn largely on Hindu sources, avoiding the intricacies of Hindu philosophy that would lead the uninitiated reader a merry dance. Indeed, the missionary who would preach Christ to the Hindu should understand the Hindu mentality, lest he beat the air in vain or betray his Master by a timid compromise.

How, then, shall we present Christ "that they may know thee, the only true God, and Jesus Christ whom thou hast sent"? Anyone who chooses to take up the challenge of Jesus Christ will find that indeed He is true, indeed He is sinless, indeed it is He that the Scriptures have foretold from the beginning, indeed His whole life is convincing confirmation of His claim, indeed God has witnessed to Him, if God has ever witnessed to anything upon this earth. "Indeed this was the Son of God." Such is the fact of Jesus Christ. He has stated His claim and He has produced His credentials; no other claim of man has been so well-founded. But after all the evidence has been given, truth itself can do no more. The Christian accepts in all its bearings the dogma of the Incarnation, the union of the natures of God and man in one single Person, Jesus Christ. Jesus Christ seen in Matthew, Mark and Luke, as much as in John and in St. Paul, too—for the distinction between the teaching of St. Paul and the teaching of the Gospels is a distinction of circumstance, never a difference of fact, a distinction made necessary because of those to whom the Apostle spoke and with whom he thought, never a tittle being changed in the message—claimed to be the Prophet that was to come, claimed to be the Messenger from on high, claimed to be the very Son of God. The Christian sees in the Gospels, taken only as history, the indubitable proof of that Person. The mystery of Jesus Christ has been solved by Himself, by His words, by His deeds, by His whole existence among men: He is, indeed, the Way, the Truth and the Life.

Christ is God. God is incomprehensible. Christ is the revelation of God. The mystery of God's creative will is God's purpose to make all one in Christ. Incarnation, Redemption, Atonement fulfil this Divine Purpose. They are the "work of Christ"—enfleshed to unite all flesh to Himself in His infinite life and love. So may we swing from the mystery of creation to that of the Blessed Vision of God, and still find, know, see, nothing but Christ in all things, and all things and ourselves "gathered-up-in-one in Christ."

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The Isles of the Blest

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LYING off the southwest coast of Morocco out in the broad Atlantic is a group of islands that have figured in ancient and medieval literature in a singular way. The Canary Islands, as they have been called in modern times, are near the tropics and yet are not tropical; and being in the line of the trade winds, they enjoy a delightful climate that attracts invalids to them every year. The mean temperature from October to May is 62° Fahrenheit, while the average is no higher than 76° during the summer. A recent handbook of the islands tells us: "Vines clothe the hillsides, growing in profusion and thriving well in the loose volcanic soil, while loquats, pomegranates, guavas, mangoes, peaches, oranges and bananas yield heavy crops of fruit." The Romans of the time of the later Republic heard from sailors rumors of these favored islands and called them the Fortunate Isles, identifying them also with the Isles of the Blest sung by the Greek poets. The Elysian Fields of mythology were supposed by some writers either to be these isles or to lie near them. The coast of Africa is but sixty miles away from the most easterly of the group; through Hierro, which is about three hundred and fifty miles west of the mainland, Ptolemy the geographer drew his first meridian of longitude, marking the westernmost land on the earth's surface. On one of the islands is the volcano of Teneriffe, which rises out of the sea to the great height of 12,192 feet. Alexander von Humboldt states in his "Cosmos" that he saw the peak from highlands around Cape Bojador.

The Phoenicians, venturesome traders of remote antiquity

who sailed to lands beyond the Pillars of Hercules (Gibraltar), may have discovered the Canary Islands. The Carthaginians are known to have discovered and colonized them; but as the Roman writers make no mention of this fact, it is thought that these shrewd traders may have kept their discoveries secret.

The volcano Teneriffe seems to have figured in mythology. Herodotus places here the spot "where Atlas supports the sky on a mountain as conical as a cylinder"; and according to legend, this was the scene of the eleventh "labor" of Hercules, who went thither in search of the Golden Apples of the Hesperides. These "apples," entrusted to the seven daughters (or nieces) of Atlas, were watched in a garden by a sleepless dragon, which Hercules slew, thus securing the treasures. A French author, Pégot-Ogier, has ingeniously explained this myth, assuming that it may have some basis, geographic or otherwise. In the Vale of Orotava, on the Island of Teneriffe, he says, stands today the shattered trunk of an immense tree of the species called the dragon-tree. Its age has been estimated by scientists, not in hundreds but in thousands of years. The bark of trees of this species is smooth and glistening like a serpent's skin, and it exudes a reddish resin called in commerce "dragon's blood." In this vale, also, grow oranges, a fruit said to have been known to the early Greeks only by rumor. Were oranges perhaps the "golden apples" of the myth?

I

The earliest mention of the Isles of the Blest in Greek literature is in the Odyssey of Homer. Menelaus is relating to Telemachus, who had come to his court in search of his long-lost father, Odysseus, how Proteus, the "ancient one of the sea," had prophesied his (Menelaus') future lot:[1]

But thou, Menelaus, son of Zeus, art not ordained to die and meet thy fate

[1]Odyssey, iv, 563 ff.

in Argos, the pasture-land of horses, but the deathless gods will convey thee to the Elysian plain and the world's end, where is Rhadamanthus of the fair hair, where life is easiest for men. No snow is there, nor yet great storm, nor any rain; but always ocean sendeth forth the breeze of the shrill West to blow cool on men: yea, for thou hast Helen to wife and thereby they deem thee to be son of Zeus.

Hesiod describes the home of heroes after death thus:[2]

Them on earth's utmost verge the god assign'd
A life, a seat, distinct from human kind:
Beside the deepening whirlpools of the main,
In those blest isles where Saturn holds his reign,
Apart from heaven's immortals calm they share
A rest unsullied by the clouds of care:
And yearly thrice with sweet luxuriance crown'd
Springs the ripe harvest from the teeming ground.

The Greek poet Pindar writes in his second Olympian ode:

Those who have had the courage to remain steadfast thrice in each life and to keep their souls altogether from wrong, pursue the road of Zeus to the castle of Cronos, where o'er the Isles of the Blest ocean breezes blow and flowers gleam with gold, some from the land on glistering trees, while others the water feeds; and with bracelets of these they entwine their hands and make crowns for their heads.

The Roman poet Horace, in his Epodes, exhorts the Romans, who were suffering from the civil wars:[3]

Ye in whom manhood lives, cease woman wailings,
  Wing the sail far beyond Etruscan shores.
Lo! where awaits an all-circumfluent ocean—
  Fields, the Blest Fields we seek, the Golden Isles
Where teems a land that never knows a ploughshare—
  Where, never needing pruner, laughs the vine—
Where the dusk fig adorns the stem it springs from,
  And the glad olive ne'er its pledge belies—
There from the creviced ilex wells the honey;
  There, down the hillside bounding light, the rills
Dance with free foot, whose fall is heard in music.

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[2]**Works and Days**, Elton's translation, 166-173.
[3]**Lord Lytton's translation, xvi, 39 ff.**

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When Jove's decree alloyed the golden age,
He kept these shores for one pure race secreted;
For all beside the golden age grew brass
Till the last centuries hardened to the iron,
Whence to the pure in heart a glad escape,
By favour of my prophet-strain is given.

Plutarch, in his "Life of Quintus Sertorius," proconsul in Spain in the time of Sylla, relates the following incident. After suffering military reverses and just escaping shipwreck with a remnant of his fleet,[4]

[Sertorius] went through the straits of Cadiz [Gibraltar] and sailing outward, keeping the Spanish shore on his right hand, he landed a little above the mouth of the river Baetis, where it falls into the Atlantic sea, and gives the name to that part of Spain. Here he met with seamen recently arrived from the Atlantic islands, two in number, divided from one another only by a narrow channel and distant from the coast of Africa ten thousand furlongs. These are called the Islands of the Blest; rains fall there seldom and in moderate showers, but for the most part they have gentle breezes bringing along with them soft dews, which render the soil not only rich for ploughing and planting, but so abundantly fruitful that it produces spontaneously an abundance of delicate fruits, sufficient to feed the inhabitants, who may here enjoy all things without trouble or labor. The seasons of the year are temperate and the transitions from one to another so moderate that the air is almost always serene and pleasant. The rough northerly and easterly winds which blow from the coasts of Europe and Africa, dissipated in the vast open space, utterly lose their force before they reach the islands. The soft western and southerly winds which breathe upon them sometimes produce gentle sprinkling showers, which they convey along with them from the sea, but more usually bring days of moist bright weather, cooling and gently fertilizing the soil, so that the firm belief prevails even among the barbarians that this is the seat of the blessed, and that these are the Elysian Fields celebrated by Homer.

When Sertorius heard this account he was seized with a wonderful passion for these islands, and had an extreme desire to go and live there in peace and quietness, and safe from oppression and unending wars; but his inclinations being perceived by the Cilician pirates (who had lately joined forces with him), who desired not peace nor quiet but riches and spoils, they immediately

[4]Dryden's translation, edited by Clough, iii, 390-391.

forsook him and sailed away into Africa. [His fortunes led him to follow them and there to engage in further military adventures.]

The Romans seem to have become acquainted with the Canary Islands about the time of this incident, possibly by means of it. Strabo, the geographer, who died A. D. 24, said that the Isles of the Blest lay west of the extremity of Maurusia (Morocco) in the region where the ends of Maurusia and Iberia (Spanish peninsula) meet. Their name, he said, shows that they lie near to the holy region, i. e., the Elysian Fields.

Juba, king of Mauretania (Morocco), sent out an expedition to explore the ocean south of the Pillars of Hercules (Gibraltar) and learn the truth about these mysterious islands. He afterwards wrote an account of the expedition for his friend the Emperor Augustus, portions of which are preserved for us by Pliny in his "Natural History." Apparently the Canary and Madeira groups were visited, and on one island Juba caused a factory to be established for supplying the purple dye obtained from the archil, a lichen that is still found in the Canary and Cape Verde Islands.

II

We find little if anything about the Fortunate Isles henceforth until, five hundred years later, they are mentioned in a work written by a Spanish ecclesiastic, St. Isidore, bishop of Seville, who lived from about 560 to 636 A.D. St. Isidore gathered into this encyclopedic work, which he called "Etymologies" or "Origins," all the learning of his time; and throughout the Middle Ages it was the textbook most in use in educational seminaries. The Fortunate Isles are therein described in these words:[5]

The Insulæ Fortunatæ denote by their name that they produce all good

[5] *Etymologiarum*, xiv, 6, 8. For some translations and passages used in this article the writer is indebted to F. Nansen's *In Northern Mists*, a work of immense scholarship, to which further reference will be made presently.

things, as though fortunate [*felices*] and blessed with fertility of vegetation. For of their own nature they are rich in valuable fruits (*poma*, literally "tree fruit" or "apples"). The mountain-ridges are clothed with self-grown (*fortuites*) vines, and cornfields (*messis* = that which is to be cut) and vegetables are common as grass (i.e. grow wild like grass, are self-sown); thence comes the error of the heathen, and of profane poetry which regarded them as Paradise. They lie in the ocean on the left side of Mauretania [Morocco] nearest to the setting sun, and they are divided from one another by sea that lies between.

The tales of the Isles of the Blest became widely current in the Middle Ages, and were to some extent blended with local folk-lore of different countries, especially Ireland. Irish pagan myths of a fairyland beneath the waves, and of voyages to the Promised Land, the Happy Plain, the Isles of the Blest, became in early Irish Christian legends accounts of voyages to the Land of Promise of the Saints. One form of such narratives was the so-called *"imrama"* or "tales of the sea," in which are related voyages of missionaries and monks to lands now difficult to identify. As we know, however, that Irish hermits built themselves cells, and monks established monasteries, on islands of Scotland and even in Iceland, some of these tales may have dealt with their wanderings.

III

The most famous tale of this kind was the Voyage of St. Brendan (or Brandan) to the Land of Promise. The story cannot be traced back beyond the seventh century; but it was spread over many countries and translated into many languages.

Brendan was born at Ardfert, near Tralee Bay on the south-west coast of Ireland, in 484 A.D. He became a monk and built monastic cells at Ardfert and at the foot of Brendan Peak. The tale of his voyage is told somewhat differently in the two main sources, the "Book of Lismore," an Irish manuscript found within the wall of Lismore Castle in 1814, and the Latin *"Navigatio Sancti Brendani."* Whether the saint

made one voyage lasting seven years or two covering the same period, he with a company of fellow monks visited many islands in search of a delightful island about which he had heard, the Land of Promise of the Saints. On one island they found many sheep (one of the Hebrides or the Faroes?); on another, which was rugged and covered with slag, were "smith's forges" (a volcanic island?). A silvery white column so high that it seemed to pierce the sky, its surface hard like marble and the column clear as crystal, may well have been an iceberg. One day there came into view a large and high mountain in the ocean, with misty clouds about it and smoke issuing from its summit. Did they reach Teneriffe, in the Canaries, or was it Mt. Hecla in Iceland? Mention of an Island of Grapes, bearing in great profusion grapes of wonderful size, and of an Island of Delight, suggests the Fortunate Isles. At length they reached the Land of Promise.

One incident of the voyage is frequently cited: St. Brendan and his companions land upon what they think is a level plain to celebrate Mass on Easter, when suddenly they perceive that they are on the back of a whale and barely save themselves before the monster plunges into the sea. Father Denis O'Donoghue, local pastor at Ardfert, who has compiled in his "Brendiana" all available data about the saint, believes that this marvelous tale arose from the fact that near Ardfert is an island in shape somewhat like a whale, on which is a cavern from which the sea waves recoil with a rush like the spouting of a whale; and that St. Brendan may have retired to this secluded spot for prayer and meditation at the time of the great festivals of the Church.

Some writers believe that St. Brendan reached the shores of North America. Influence of the classic tales of the Isles of the Blest is seen in his quest for the Land of Promise and he may have reached one of the Canary Islands. An island called St. Brendan's Island was marked upon maps of the fourteenth and succeeding centuries even down to the nineteenth, its location being first in the north, then west of Ire-

land, then southward near the Canaries, finally east of Newfoundland, until it was finally dropped. It was sometimes called the Lost Island. This recalls tales of the "unapproachable island" of the Canary group, called by Ptolemy *Aprositos,* which was sometimes sighted by mariners but disappeared when approached. So firm was the belief in this eighth member of the Canary Islands that no less than four expeditions were sent out by Spain and Portugal in search of it between 1526 and 1721, and it was named in a treaty in the year 1519. San Borondon, as the Spaniards called it, was finally proved to be a mirage.

IV

Icelandic literature contains many statements about a land called Vinland (or Wineland) the Good, which was said to lie to the southwest or south of the Norse settlements in Greenland. Two sagas, one contained in the Hauks Book and the other, which is rather two so-called Tales complementing each other, contained in the Flatey Book, are the main narratives in which are described divers voyages to Vinland made by Greenlanders in the early years of the eleventh century. The details of these voyages and the historical problems involved in their interpretation do not concern us here,[6] but the frequent assertion, in Icelandic and other references to Vinland, that wild grapes were found there, and "self-sown wheat"—a cereal that has never been definitely identified in this connection—suggests some link between such passages and the persistent tradition that these features were characteristic of the Fortunate Isles. Fridtjof Nansen has with marvelous

[6]The reader who is interested in following the events of these early Norse voyages and in surveying the various theories that have been held, during the past two hundred years, regarding the places described in the sagas, may consult an article by the present writer entitled "The Norse Voyages to America" in *Mid-America* (Chicago) for January, 1932. A special aspect of the subject is treated in "The Catholic Contribution to the History of the Norse Discovery of America" in the *Catholic Historical Review* (Washington) for January, 1928. Cf. also THOUGHT, June, 1927: "The Norse Discovery of America," by Henry Harrington.

scholarship brought together, in his work called "In Northern Mists," many parallels between certain passages in the sagas and similar passages in the classical authors treating of the Fortunate Isles, St. Isidore's description of them, and the Irish voyages to the Land of Promise. Nansen maintains that

> the saga's description of Wineland must in its essential features be derived from the myth of the Insulæ Fortunatæ [and that] when therefore Norsemen (like a Leif Ericson) really found new countries in the west, precisely in the quarter where the mythical "Vinland hit Gotha" (or Insulæ Fortunatæ) should be according to Irish legend, this was simply a proof that the country did exist; and the tales and ideas about it were transferred to the newly discovered land.

Nansen's onslaught upon the historical value of the Vinland sagas has been vigorously criticized and his theory denied, even by Scandinavian scholars as competent as Nansen to decide the question; and writers upon the Norse voyages have been in the habit of ignoring his contentions altogether. The Vinland narratives are far too straightforward and sober to be disposed of as Nansen explains them. The measure of success that a line of illustrious scholars has attained in identifying the localities reached by the early Norsemen and in rearranging the texts in a consistent narrative of events, sufficiently indicates the historical basis of these sagas. It is fair to Nansen's claims, however, to admit that very probably the sagamen did identify lands actually discovered in the west, where the climate was mild and where grapes grew wild, with the long-sought Fortunate Isles. How far this association of ideas led to the introduction of legendary incidents into the narratives it is difficult to say.

V

Such has been the singular part that the Canary Isles have played in literature—Greek poetry, classical geography, medieval lore, Irish *"imrama,"* Icelandic sagas. We doubt whether any theme has ever been treated in more widely separated fields or with greater variety of setting and imagery.

The Mythical Doubter

JOHN J. TOOHEY, S.J.

NOWADAYS the words *problem* and *doubt* possess a talismanic power. It is interesting to observe the fascination they exert over a certain class of minds. In many circles it has become a fashion to introduce them into every topic of discussion. Even Abbé Dimnet seems to have yielded somewhat to their spell, as witness the following sentence from his "Art of Thinking" (p. 146, italics his): "The student must acquire the habit—which both Descartes and Schopenhauer regard as the fundamental philosophical attitude—not to receive anything as true or beautiful, but to consider everything *as a problem*." In this passage the Abbé does but echo a sentiment which has high sanction in many of our academic centers. The use of the word *problem* is esteemed a mark of intellectual distinction. View everything as a problem, and you will receive your first papers of admission to citizenship in the Republic of Higher Thinking.

The man who, if not the founder of the Problem School of philosophy, certainly gave it life and momentum, was René Descartes, and down to this day he remains the prime oracle of the school. His influence is visible nearly everywhere in philosophy outside the tradition of Plato and Aristotle. The catalogue of prominent names who bow to him is an impressive one.

The trouble with the fundamental dictum of this school —that everything should be considered as a problem—is that it cannot be reduced to practice. What is worse, it defies even the attempt to reduce it to practice. Of course, a man may delude himself into thinking he is doing so. So singu-

larly futile is the dictum, that one wonders at times whether its champions really expect to be taken seriously and whether they are not indulging in exaggeration for rhetorical effect. Can it be that we are doing them an injustice in attaching a literal meaning to their words when, after all, they are but employing cryptic phrases whose sense is revealed only to the initiate? However that may be, the remarks which follow are offered on the understanding that the words of these philosophers are to be interpreted literally.

I

In the eyes of his worshippers, Descartes' chief title to fame in philosophy is his proposal of a universal doubt as a method of reaching certitude. He claimed in his own case that he was able to push this method to the point of doubting everything except his own existence. This doubt of Descartes, being entertained, not for its own sake, but for a definite purpose, viz., the acquisition of certitude, was called the Methodic Doubt. Descartes attempted to justify this doubt on two grounds: first, the fact that we have made mistakes; secondly, the possibility that we are the victims of a malignant spirit who is perpetually deceiving us. Let us consider these reasons in order.

Descartes appeals to the various occasions on which we have been led into error by our senses, by our reason, by our memory, and by human testimony. Therefore, he says, we must withdraw our assent from everything that has come to us from these sources and we must doubt everything except our own existence. This conclusion of Descartes is open to criticism from two directions. In the first place, a sensible man, when he finds himself in error in any matter, learns a lesson from that error and takes precautions against its repetition. He does not simply forget it or doubt its occurrence. But Descartes would have him doubt whether the error ever

took place, for he is commanded to doubt everything except his own existence.

In the second place, since the Methodic Doubt means that we should doubt everything except our own existence, it means that we should doubt the arguments or reasons which are advanced in favor of the Methodic Doubt. If, therefore, in obedience to the rule of the Methodic Doubt, we doubt the reasons for it, why, then we have no reason for adopting it. How can a man reasonably accept the rule of the Methodic Doubt when, in order to do so, he must doubt the reasons for it?

Descartes' reasons for urging the adoption of the Methodic Doubt may be stated in the following propositions: (1) we have been deceived by our senses; (2) we have been deceived by our reason; (3) we have been deceived by our memory; (4) we have been deceived by the words of other men; (5) we have been deceived by dreams. Each of these propositions expresses a truth which is evident to us and which we accept. But these truths would not be evident to us unless each of them was certified to us by an additional evident truth. It is impossible for us to find ourselves in error unless the discovery of some truth reveals to us that we have been in error. The discovery of personal error has no tendency whatever to cast doubt upon the mind's power to acquire truth. On the contrary, it is a strong vindication of that power, for it always means an increase in our knowledge. It always involves the acquisition of at least two truths and frequently of many more. The two truths are: first, the truth that we had made a mistake; and secondly, the truth which brought home to us that we had made a mistake. Moreover, the discovery of such error commonly carries with it this signal benefit, that it warns us away from the path upon which our feet have stumbled, and thus diminishes the chance of similar error in the future.

Observe, next, that Descartes is appealing to our memory

to attest the truth of the propositions which were mentioned above; for in each instance he is appealing to the past. Hence, by his own argument, there are cases in which we know that our memory may be trusted. Now, what is Descartes' procedure? He adduces the evidence of all these truths as a proof that they are *not* evident and, therefore, that they should be doubted! If nothing is evident except our own existence, then none of the foregoing propositions is evident. When the premises or reasons are stated as evident, surely the conclusion cannot be that the premises are not evident.

This procedure of Descartes is typical of the whole skeptical school: every one of its arguments commits suicide. In the nature of things, it could not be otherwise. To set out to obtain evidence or proof of the proposition that nothing is evident is essentially a hopeless enterprise.

II

Let us now consider Descartes' second plea for the Methodic Doubt, viz., that it is possible we are at the mercy of a malignant spirit who is deceiving us in everything. The first remark to be made upon this supposition is that it cannot possibly be supported by argument. Any attempt to argue in favor of it destroys the supposition or, if we like, the supposition destroys the argument, just as the Methodic Doubt nullifies every attempt at argument in its behalf. As a matter of fact, the supposition may be regarded as merely another way of stating the doctrine of the Methodic Doubt.

The introduction of the malignant spirit is irrelevant to the issue. What constitutes the point of the supposition is not the cause of the deception, but the deception itself. The point, then, is expressed in this proposition: "It is possible we are deceived in everything." Let us suppose for a moment that this proposition is true. If it is true and we accept it, we are accepting a truth, and hence we are not deceived in everything.

Descartes evidently intends us to consider the proposition momentarily as true. What is implied in his presentation of this proposition? In presenting it, he knows that there are human beings and that they have the power of acquiring truth. He is not presenting the proposition to the malignant spirit; he is presenting it to *us*. Since he is presenting it to us that we may momentarily consider it as true, he knows that we exist and that we have the power of acquiring truth. He would not present the proposition to an imaginary man or to a horse or a tree. But in order to know that we have the power to acquire truth, he must have had experience of our actually acquiring truth. The presentation of the proposition, then, amounts to this, that Descartes knows we have acquired truth and at the same time wishes it to be considered true that we may have been deceived in everything.

If it be objected that Descartes is not offering the proposition to us, but to himself, the same reasoning applies. In order deliberately to set about accepting a proposition as true, he must know that he has the power of accepting truth, and he cannot know he has this power without knowing that he has actually accepted truth. If the word *assume* be substituted for *accept,* it leaves the argument unaffected. He cannot deliberately perform the act of assuming something to be true without knowing that he has the power to assume and that he has before him the proposition which he is about to assume. As was noted above, he would not present the proposition to a being that, in his judgment, had not the power of accepting it or assuming it to be true. Consequently, in order to present the proposition for assumption as true, he must know at least two truths, viz., that he has the power of assuming, and that he has the proposition before him which he is about to assume. Let it be observed that these truths must be known prior to the acceptance or assumption of the proposition; the necessity of knowing them is not deduced from the fact of assuming the proposition to be true.

Moreover, the proposition, "It is possible that we are deceived in everything," cannot possibly be accepted as true. In order to understand the proposition at all, we must know what it is to be deceived, and we gain this knowledge only through experience of deception. Certainly the knowledge must come to us from some direction. A prerequisite, then, to an understanding of the proposition is that we should *not* have been deceived in everything. Our knowledge or experience of deception cannot itself be a deception; else we should put a wrong interpretation on the word *deceived* in the proposition, and we should be unable even to understand or contemplate the supposition which Descartes sets before us.

III

There is nothing in the foregoing criticism of Descartes' position that does not apply with equal force to Abbé Dimnet's advice to the student which was quoted above: "The student must acquire the habit . . . not to receive anything as true or beautiful, but to consider everything *as a problem.*" The student cannot accept this advice of the Abbé. If he is to consider everything as a problem, he must consider this advice as a problem; and as long as he considers it as a problem, he cannot accept it. In fact, the very words of the Abbé are an appeal to the student not to receive the advice as true.

The minimum requirement of any philosophy is consistency in essentials. Doubtless even the greatest minds are betrayed from time to time into inconsistency. The weariness which follows upon prolonged concentration is in many cases the explanation of this phenomenon. But one of the distinctive marks of the true philosopher is a readiness, nay, an eagerness, to relinquish a position once he had found it to be inconsistent.

Descartes furnishes a striking instance of a man of undoubted genius and scientific attainments going astray in the field of philosophy. But his case is by no means a solitary one. Indeed, one of the most frequent phenomena to be ob-

served in the history of philosophy is how the philosopher will fall asleep in the midst of his speculations, how he will remain in a semi-conscious state throughout his life, and how he will fail to notice certain essential points in his subject-matter which are staring him in the face. Horace's celebrated saying, *"quandoque bonus dormitat Homerus,"* has an application far beyond the realm of poetry.

When in his "Discourse on Method" Descartes is engaged in laying down precepts for the guidance of scientific investigation, he is admirable and he well deserves the applause which has come to him from men of science. Separate sharply the certain from the uncertain; reduce involved and obscure propositions to those that are simpler; subject what claims to be a proof to a severe scrutiny before acquiescing in it: such are some of Descartes' rules of procedure, and it is obvious that their observance will have an important influence on the progress of science. Descartes' vision was clear and steady when his subject was mathematics or physical science, but it faltered and grew dim when he entered the field of philosophy. The reason was that he lost sight of his own rules. And by a strange freak of fate, most modern philosophers have exhibited the same weakness that showed itself in Descartes. Instead of guiding themselves by the rules which Descartes had formulated, they put them aside, and fastened upon the crudest and most indefensible part of Descartes' philosophy and extolled *that* as his great achievement.

The modern philosopher has an itch for the bizarre, for what is paradoxical, sophistical and startling. Let the choice be between what commends itself to the common sense of mankind and what flies in the face of it, and we may be fairly sure beforehand that the philosopher will give his sanction to the latter. The result is the bewildering mass of confusion which is spread before us at the present day and dignified by the name of philosophy. Whatever weakness may justly be laid to Descartes' account, there is one fault which can rarely be charged against him even when he is occupied with ques-

tions of philosophy, and that is obscurity. He may be wrong in his conclusions, but there is scarcely ever any doubt as to his meaning. In this he is a sharp and vivid contrast to the philosophers who have succeeded him, especially since the time of Kant. Kant is the father of the modern confusion. Some chronic dislocation in the mental equipment of the modern philosopher drives him towards the vague and the mysterious, and impels him to frown upon what is clear and simple and straightforward. Clearness seems to be identified in his mind with shallowness. It is plain from the principles of Descartes that this delusion must be conquered before there can be any hope of a prosperous career for philosophy.

IV

A suggestion might be offered as a possible explanation of the weird fancy of Descartes which we have been discussing in this paper. First, it may be that he was inadvertently contemplating, not his own mind, but mind in the abstract, or the mind of another person, say, Mr. Nemo. Now, the supposition that Mr. Nemo may be deceived in everything possesses *prima facie* a semblance of consistency, though even in this case the supposition will not bear examination. But even if we could consistently make this supposition in regard to Mr. Nemo's mind, we could not do it in regard to our own.

Secondly, Descartes may have confused doubt with inattention or oblivion or ignorance; and there is ground for suspecting that he did so. Certainly, if anything is clear from his writings, it is that he never came anywhere near exemplifying the rule of the Methodic Doubt in his own person. It is one thing to doubt a propositon; it is a very different thing to turn one's attention away from it or to forget it or to be ignorant of it. We may divert our attention from the invention of the telephone, but this does not mean that we doubt that invention. When a man is in a state of dreamless slumber or has fallen into a fainting fit, everything has passed out of the focus of his attention, but he does not doubt everything; otherwise

you could turn a man into a universal skeptic by the simple expedient of drugging him or knocking him senseless with a club, and the bulk of humanity would become universal skeptics every night in the year. Doubting is a positive act, and can be performed only by a person in the possession of his senses. In order to doubt a proposition, it is essential to have the proposition before the mind, to know what it is that one is going to doubt. A man cannot doubt the presence of the proposition the truth of which he is doubting. Where there is no knowledge, there can be no doubt. For this reason a universal doubt is an intrinsic impossibility.

The word *prescind* is of familiar occurrence in philosophy. It means to fasten one's attention upon one or two things or attributes and to leave everything else out of view. If we substitute *prescind* for *doubt* wherever it occurs in Descartes' essay, we shall find that, up to a point, we are able to frame a fairly plausible case for his contention. If we set about determining, not how far we can carry our doubt, but how far we can go in excluding objects from our attention, we shall discover that we are able to extend the process of exclusion to the point which Descartes fancied he had reached by the exercise of doubt. What are we able to exclude from attention consistently with the exercise of attention? This is almost equivalent to the question: How far can we carry the process of analysis? It is a profitable exercise to push our analysis to the furthermost limit. It is in this way that we arrive at first principles and gain that fundamental insight into reality which is the goal of philosophical speculation. But analyzing or prescinding does not mean doubting everything that is left out of thought.

By all means, then, let us analyze; let us not cease from analysis till we have penetrated reality to the core; let us insist upon evidence for that which we accept with a full acquiescence; but, in the name of all that is reasonable, let us not pretend to doubt when we are not doubting; above all, let us not allow our conclusion to give the lie to our premises.

Limitations of Scientific Method

LEO W. WELCH, S.J., M.A.

TENTATIVE solutions to the ever-recurring enigmas of the nature of the universe, the origin of life and the destiny of man are being proposed in great numbers by modern scientists. The solutions differ with the viewpoint of the minds constructing them. The building material is not the same for all. And there is no universally recognized valid method of approach. Consequently there is a wide discrepancy in the conclusions arrived at, as is clearly illustrated by the theories advanced in the literature here under discussion. Some fundamental principles must be adopted or assumed by all scientists as a standard or norm by which they judge the validity of the conclusions drawn from their investigations. The older scientists assumed principles which they did not analyze and adopted a system which they did not try to justify. As long as it worked they were satisfied, but finally it ceased to work: new experimental data could not be made to fit logically into their mechanical model.

I

When the theoretical physicists found their road blocked in this way, they turned to a critical investigation into the mental processes employed in the development and coordination of scientific knowledge. They discovered that the reason why the road to further progress was blocked, lay in their fundamental postulates. They must alter their postulates, but how? What new theories should supplant the old ones? They unwit-

tingly delved into epistemology in search of solid ground to stand on, but insisted on finding it in the shifting sands of experimentalism. The scales of inherited prejudice blinded their eyes to the hard rock of metaphysics. The exact sciences must never be wedded to the medieval jinx which had balked the progress of knowledge for so many centuries. Consequently they were forced to the stand that their fundamental postulates were merely postulates. They could never be proven true; but they might be proven false. If their logical consequences were ever found to be inconsistent with the data of experience, they would have to be rejected as inadmissible or inadequate and other hypotheses would have to be formulated to take their place.

In this method of procedure all of the superstructure of science is hypothetical; the interpretation and correlation of the content of observation may be constantly changing with the discovery of new data. While such a system can never satisfy the intellectual curiosity of the whole man who is looking for a unification of knowledge and an ultimate explanation of the universe, it is a perfectly legitimate method of procedure for empirical scientists. It imposes such restrictions on their conclusions as make it logically impossible for them ever to come in conflict with philosophy or religion, whereas scientists who propose their working hypotheses as self-evident truths never hesitate to claim the whole field of knowledge as their legitimate province. Recognition of the dependence of science on epistemological theory not only fences off the field to which men working as *scientists* are logically confined, but furthermore, if the epistemological investigation is pushed far enough by scientists acting as *men,* it is destined to carry them through the barred gateway of metaphysics to a grander vista of coordinated, unified and satisfying knowledge.

When the nineteenth-century scientists used the general concepts, *mass, force, hardness, extension,* to build up their laws of nature, they thought they had borrowed these concepts

immediately from nature. But Jeans[1] and Einstein[2] point out that an analysis of the manner in which we come in contact with and formulate our knowledge of nature shows that the older scientists were in reality projecting their fictitious pictures of nature out onto nature itself. Sense experience gives knowledge of singulars only and, as Jeans remarks:[3] "Before we can study the properties which objects possess in their own right, we must learn how to allow for the special circumstances of the perceiver and the act of perception."

Sense experience cannot tell us that all apples fall to the ground when left unsupported in the air; all it can say is that this apple fell. From that experience the mind abstracts a generic element but the process of abstraction does not acquaint us with the manner in which the abstracted element exists outside of the mind nor does it establish the connection between that element and other generic concepts. Such further questions can be decided only by reflection and inference or argumentation. Because the nineteenth-century scientists confounded inference with abstraction they acted on the assumption that the basic concepts and laws of their scientific theories were exactly conformed with external reality. According to Einstein:[4]

> It was the general Theory of Relativity which showed in a convincing manner the incorrectness of this view. For this theory revealed that it was possible for us, using basic principles very far removed from those of Newton, to do justice to the entire range of the data of experience in a manner even more complete and satisfactory than was possible with Newton's principles.

Modern physicists believe that they avoid this mistake by consciously assigning to reason the function of constructing the basic concepts and the structure of their system. In this way

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[1]The New Background of Science, by Sir James Jeans, M.A., D.Sc., Sc.D., LL.D., F.R.S., New York, The Macmillan Company, 1933.

[2]On the Method of Theoretical Physics, by Albert Einstein, New York, Oxford University Press, 1933.

[3]Jeans, op. cit., p. 21.

[4]Einstein, op. cit., p. 13.

the concepts are stripped of all those aspects which presuppose nature can be interpreted in mechanical terms. Jeans states:[5]

> These mental concepts are not of the kind that we associate with the work of the engineer or the poet or the moralist, but with the thinker who works with pure thought alone as his raw material, the mathematician at work in his study.

Einstein clearly defines the parts played by reason and experience within the system of theoretical physics:[6]

> It is my conviction that pure mathematical construction enables us to discover the concepts and the laws connecting them which give us the key to the understanding of the phenomena of Nature. Experience can of course guide us in our choice of serviceable mathematical concepts; it cannot possibly be the source from which they are derived; experience of course remains the sole criterion of the serviceability of a mathematical construction for physics, but the truly creative principle resides in mathematics.

It is in testing the consequences derived by logical deduction from the concepts and laws of the structure that experience is invoked. The construction of the system is a-priori, its test is experimental. If experience does not conform exactly to consequences in the theory, the theory must be abandoned in favor of some other logic-bound edifice. Experience will show us when we have to chip corners off the bricks with which the mind builds the edifice, where they are too long or too short or too wide; it can never provide the bricks, nor tell us that any brick is exactly shaped to the space it occupies. As Jeans says:[7] "One phenomenon is enough to disprove a hypothesis, but a million million do not suffice to prove it."

Einstein shows that scientific systems are always hypothetical because the basic concepts on which they rest are necessarily invented by the mind; Jeans shows that they are so because sense-contact is incapable of giving us an adequate picture of the outside world. Experimentation can never give

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[5]Jeans, op. cit., p. 290.
[6]Einstein, op. cit., p. 15.
[7]Jeans, op. cit., p. 46.

us more than partial aspects of reality. Sense-contact is dependent on changes taking place in the object perceived as well as in the sensory nerves. No scientific experiment can reach the reality underlying the world of phenomena, nor can experimentation reveal with exactness the activities in objects which are the *conditio sine qua non* of their being perceived. Hence Jeans insists very strenuously on the fact that physical science can give us certain knowledge only of the manifestations of reality, never of the reality itself:[8]

> Our mental activities are stimulated by sense-impressions which originate beyond our senses; to account for these, we invent an external world of objects and entities, but everything beyond our senses is pure inference.

Jeans takes us through the historical and logical developments in theoretical physics during the present century, from the Michelson-Morley experiment to the generalized theory of relativity, and from the discovery of Planck's quantum to de Broglie's theory of wave mechanics, showing how new experimental discoveries necessitated the adoption of these new a-priori principles, and the new epistemological groundwork led in turn to new systems of coordinating scientific data. His insistence on the impossibility of interpreting these systems otherwise than as arbitrary frameworks which are found to be the best means of mentally picturing the manifestations of nature, should do much to reconcile philosophers and others intent on the unification of knowledge, with the usage of such terms as "warped space-time" and "waves of probability." These are not postulated as entities existing in external nature but only as tags used to identify mathematical inventions of the mind. Electron waves are, as Jeans writes,[9] "mere mathematical waves, and possess no physical reality"; and light waves also must be regarded "as mere diagrammatic representations of our knowledge as to the whereabouts of photons."[10] Dealing with relativity he has this to say:[11]

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[8]Jeans, op. cit., p. 171.
[9]Jeans, op. cit., p. 221.
[10]Jeans, op. cit., p. 239.
[11]Jeans, op. cit., p. 108.

Again we must recall that the space and time with which the theory of relativity deals are merely a time and space selected by our own minds for the discussion of natural laws. The theory of relativity does not assert that anything more tangible than our own thoughts can impinge on the year 1942, and this can hardly be said to endow the year 1942 with a real existence at the present moment.

Much of the muddled and futile criticism of the modern theoretical physicist has been caused by putting a too literal interpretation on his words. Einstein warns us of the danger, in his opening paragraph:[12]

Don't listen to his words, examine his achievements. For to the discoverer in that field, the constructions of his imagination appear so necessary and so natural that he is apt to treat them not as the creations of his thoughts but as given realities.

II

The definition of science as a coordination of the appearances of reality into a logical system leads to questions touching on the ultimate nature of reality. Can we acquire any more ultimate knowledge of nature than that which science gives? Can science ever discover the plan which nature herself follows? The enunciation of limitations in scientific method necessitated by the epistemological background outlined by Jeans and Einstein, proves that physical science cannot step over the wall which separates phenomena from reality. But if these men were prepared to follow up their critical investigation into all of the processes of the mind, they would be forced to admit that metaphysical science takes up the argument where physical science leaves off. In metaphysical science the mind can reach the ontological real; it has the power to abstract the intelligible from the sensible, the rational from the phenomenal. But scientists still balk at metaphysics. In their diction metaphysical problems are those only which cannot be solved. Metaphysical proofs are no proofs because they cannot be tested by experimentation. Yet Jeans sincerely wishes to "escape from the prison-house

[12]Einstein, op. cit., p. 5.

of our senses"[13] and toys with the conjecture "that our minds are in contact with reality through other than purely physical channels,"[14] evidently meaning some kind of instinctive or mystical intuition. He suggests that if the language of phenomena could be translated into the language of reality, the words of this language might or might not "be mental in their meaning; the immediate point is that, even in the alphabet, we can discover no reality different in kind from that we associate with a mere mental concept."[15] The reason for this line of speculation is the old stumbling-block of dualism. How can two be one and one be two? Jeans tentatively turns to idealistic monism as the most probable way out of this difficulty:[16]

> Idealism has always maintained that, as the beginning of the road by which we explore nature is mental, the chances are that the end also will be mental. To this present-day science adds that, at the farthest point she has so far reached, much, and possibly all, that was not mental has disappeared, and nothing new has come in that is not mental.

Another way out is given by Professor Jennings in the Yale Terry Lectures[17] for 1933. He presents us with a unified view of the world, including man, built up on the basis of materialistic monism. Matter is the only substance that exists. All sensitive and mental activities are properties of matter, not predictable from the operations of the crude constituents, but entirely new manifestations of powers inherent in matter when the elements are joined in new combinations under new conditions. He writes:[18]

> When, therefore, we think of electrons, protrons, neutrons, atoms, or other elementary constituents of things, our idea of them is incomplete and inadequate in most fundamental ways if we do not include in their properties

[13] Jeans, op. cit., p. 57.
[14] Jeans, op. cit., p. 142.
[15] Jeans, op. cit., p. 290.
[16] Jeans, op. cit., p. 296.
[17] The Universe and Life, by H. S. Jennings, New Haven, Yale University Press, 1933.
[18] Jennings, op. cit., p. 15.

the production of life when they become combined in certain ways. Among their properties is the production of sensations, emotions, thought, of all the diversified mental experiences which belong to living things, to men.

Although Professor Jennings never claims in so many words, the savor of the whole treatise insinuates that empirical science is the only method of acquiring any valid conclusions about the origin of life, the immortality of the soul and the existence of God. And since the final foundation of science is "critical observation and experimentation," it is no wonder that he never found any other substratum for intellectual activity than brute matter.

Yet the postulates on which the validity of his whole system rests cannot be proved by experience. Determinism is the backbone of his whole system. The principle of determinism is assumed by Jennings for the same reason the nineteenth-century scientists had in assuming it—because it works. "What the upbuilding of science depends on is merely the principle that what happens depends on the conditions, and that when different things happen, there are different preceding conditions."[19] Yet determinism cannot be discovered in nature solely by experimental investigation. It is impossible to specify completely the objective antecedents of any event by means of experimentation. The conclusions of science which are based on purely empirical induction, must, as Jeans points out, have as their object merely the appearances of reality insofar as up to now they have been made manifest. They can have nothing to say about the underlying substratum. But Jennings fails to distinguish between the surface phenomena and the underlying reality. In consequence, to be consistent and to be in accord with sound epistemology, he must abandon either one of two principles; he cannot proceed by empirical induction and at the same time offer his conclusions as explanations of ultimates. He must either enter into metaphysics and make a *perfect* induction or, if he holds tight to empiricism, admit that his science deals merely with the ripples on

[19] Jennings, op cit., p. 48.

the surface of a stream and cannot discern the rigid rocks beneath.

Doctor Robertson's definition of mechanism is hardly distinguishable from Jennings' description of determinism, and it is open to the same criticism. Robertson states:[30]

> A mechanism is not a distinct species of thing-in-itself, but a pure intellectualization which we apply to a concatenation of events of which we perceive the beginning, the end and a sufficient number of the intermediate stages to permit imagination of the remainder. . . . So soon as we completely apprehend all of the limiting conditions the outcome appears to us intellectually inevitable, and we designate this a "mechanistic explanation."

The succession of events when fully apprehended should satisfy our intellectual curiosity. In fact, when the succession of events has been established in any particular case, the force that was imagined to have caused them becomes a "fortuitous concourse of atoms." Hence in living organisms, when we have discovered the succession of events, Robertson declares:[31]

> The intriguing possibility of the direct interposition of a guiding purposive agent, a "vital force" or an "entelechy," appears to us to have vanished, still, of course, remaining possible wherever the limiting conditions and the succession of events are not yet fully apprehended.

No more ultimate explanation of life is needed once we have detected the arrangement of the atoms which *happened* to combine in such a way as to produce a living organism.

Jennings and Robertson both follow the empirical method which must be employed in the field of natural science. Where they make their mistake is in supposing that the natural sciences can give us the ultimate explanation of basic problems. They are justified in saying that their scientific experiments do not reveal the existence of any spiritual substance, and that in positive science there is no need for postulating free will or teleology. They are not justified in assuming that methods of investigation other than those

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[30]The Spirit of Research, by T. Brailsford Robertson, Ph.D., D.Sc., edited by Jane W. Robertson. With an Introduction by S. W. Pennycuick, D.Sc. Adelaide, F. W. Preece & Sons, 1931, p. 139.

[31]Robertson, op. cit., p. 140.

employed in physical science are not decisive. The empirical method cannot give us satisfactory answers to the more fundamental questions which perplex the human mind, because these questions deal with subjects which are incapable of being measured with a meter stick.

Believing that all knowledge is to be obtained through experimental investigation, Doctor Robertson argues for a spirit of research not only among scientists but in the community at large, which shall make the promotion of science the ultimate aim of their lives. His appeal to scientists to be men of high ideals and upright moral character, and his plea to educators to unfold in the classroom the broader vision of the unity and grandeur of nature, introduce subjects which are worthy of much consideration. But his ultimate goal is the intellectual super-man. The ultimate purpose of life is to extend and ennoble our vision of the physical universe, to make man's knowledge coextensive with reality, to enlarge his comprehension until it is "impossible to distinguish the without from that within:[22]

> It is the seeking for this, and this only, which confers dignity upon science and justifies the effort which is expended upon it. More than that, it justifies human existence as a whole, and lends to it an objective worthy of our unique endowment of conscious intelligence.

III

Sir Francis Younghusband,[23] on the other hand, feels that the destiny of the human race is not to be ascertained from the material world alone. His book is less satisfying insofar as it is punctured with many illogical leaps of the imagination, yet in many other respects it is more satisfying. It gives a far more human outlook than empirical science can give. It is more adequate because it recognizes that man is spirit as well as matter, and that his powers of intellect and will are capable of a higher existence than that of mere cogwheels in a monster

[22]Robertson, op. cit., p. 208.

[23]The Living Universe, by Sir Francis Younghusband, K.C.S.I., K.C.I.E., New York, E. P. Dutton and Company, Inc., 1933.

machine. The human soul hungers and thirsts for spiritual life, and Younghusband allows it egress from the valley of matter to which Jennings and Robertson would confine it.

Younghusband gives due credit to science for its revelations of the intricate workings of nature, but philosophy is also recognized as having a definite part to play in the discovery of knowledge. He synthesizes the findings of science with Aristotelian metaphysics, Oriental mysticism, and a great deal of fancy. He rightly describes the organization and development in the universe to the guidance of a Great Mind, but as he cannot conceive of a spirit existing independently of matter, he would have this Great Mind exist in the physical universe as a soul in its body, permeating the whole and governing the individual actions of each infinitesimal part. This Great Mind, the Cosmic Spirit, "must be always and everywhere operating, and be forever striving to create and express itself in creatures more and more akin to itself."[24] One of these creatures so produced was the primordial protoplasm from which all life on this earth has evolved. The successful stages of evolution, from the dim glimmer of mentality in the lowest animalculæ to the most acute and powerful intellects of the great spiritual leaders of mankind, were happy issues to the struggling attempts of living organisms to reflect in themselves more and more of the infinite beauty, goodness and love of the Cosmic Spirit. Future struggles will bring forth minds which instinctively reach out with penetrative insight into the innermost essence of things, and along with this faculty of intuition will come a more passionate response to beauty and holiness and a quickened disposition to love. Men shall strive for a more intimate union with the Cosmic Spirit through intellect and will, and the culmination of this union will be had in the mystical experience, a state of exaltation and surpassing joy.

Life is not confined to our planet. The goal we are headed for has been attained by intellectual beings on planets without

[24]Younghusband, op. cit., p. 228.

number. Life always has been and always will be, waxing to culmination and waning to the level in one planet after another, "rolling on for ever in one Grand Essential Rhythm. . . . And through all, as the ground of all, will abide unchanging and eternal the Holy Spirit whose body is the universe we see with our eyes, and of whom we are responsible agents."[25]

IV

All of these Universe-Builders have seized upon a great many elements of truth, but in each system the truth is distorted. The scientists erred grievously by presenting partial truths as the ultimate answers to the great riddles of life. Younghusband has come nearer to the whole truth insofar as he places personality and spiritual values on a higher plane than atomic motions. If only he could have hurdled one significant obstacle, his system would necessarily have been a close approximation to the universe as seen through the eyes of a Catholic philosopher. The one obstacle he could not hurdle was the existence of spiritual substance independently of matter. In all of these books the authors have denied the individual any future personal existence. This has cut a gap in their systems which would leave most men cold to their practical conclusions. They exhort the men of this generation to cultivate the nobler instincts and higher virtues in order that future generations may enjoy better life. We should struggle in order that posterity may have less bitter struggles. We should go to battle in order that they may enjoy the victory. Tell the man in the street that with death his individual life is consummated, and he will proceed according to the dictum, "Eat, drink and make merry, for tomorrow we die." This is a fact of experience. If experience is to be the sole guide of scientists, why do they ignore this, in our day, so very evident fact?

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[25]Younghusband, op. cit., p. 231.

Patmore's Philosophy of Love

I. THE UNKNOWN EROS

ELEANOR DOWNING, M.A., B. Litt.

IN "The Angel in the House" Patmore deals with human love spiritualized; in "The Unknown Eros," with Divine Love humanized. The earlier poem conveys unmistakable hints of the supernatural purpose of earthly love; but the emphasis is placed on its temporal course and its accidental manifestations. The later poem plunges boldly into the subject which "The Angel," approaching it as parable and prelude, merely suggests. The relation of God to the soul—not in the awful aspect of Creator to creature, but in that of Lover and Spouse to the Beloved—is the theme of "The Unknown Eros."

The spiritual doctrine of "The Unknown Eros" was already present in "The Angel," and the later poem is an unfolding, in natural order and sequence, of the theme of the earlier. Their sharp differentiation of form and structure cannot disguise the fact that they are inherently related: "The Unknown Eros" resting its fragile glory on the solid basis of human testimony; "The Angel" finding in "The Unknown Eros" the complete confirmation of its prophecies. The theme of "The Unknown Eros" was still more definitely prepared for in "The Victories of Love," for in this sequel to "The Angel" is heard the premonitory warning that love works through suffering no less than through felicity. "The Unknown Eros," however, exalting pain and finding in it the

secret of joy and wisdom, lifts the doctrine to its supernatural climax.

I

The poem is now divided into a Proem and two Books; Book I including twenty-four odes; and Book II, eighteen. The present structure of the poem[1] is the result of considerable rearrangement in the order of the odes. In the earlier editions,[2] no sequence of thought was apparent; but we may now trace a well-marked progression from the natural, illuminated by grace, to the more purely mystical. We may, therefore, infer that Patmore's original aim in the poem was the revelation, in poetic form, of the life of grace, conformed to his nuptial idea, and advancing from the vision of God seen through nature to the vision of nature informed by God. That the line of spiritual progression is not strictly adhered to in "The Unknown Eros"—is, in fact, constantly interrupted by the introduction of odes of a seemingly unrelated nature—is suggestive of the movement of rise and fall in the spiritual life. It reflects, too, Patmore's view that all things secular are related to the soul's life, and illustrates, more or less faithfully, the nuptial idea. We may, therefore, claim a true unity for the odes, despite their external disparity of subject.

It follows from the progressive nature of the theme that—though the category is not strictly observed—Book I contains

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[1]Coventry Patmore, Poems. Introduction by Basil Champneys, London, Bell, 1906. The 1906 edition differs from the last edition sanctioned by Patmore (1886) only in the omission of his essay on "English Metrical Law" and of verses by his son, Henry. References are the 1921 reprint of the 1906 edition.

[2]The first odes, nine in number, were privately printed by Patmore in 1868. ("Odes", not published, London, Savill, Edwards and Co., Printers.) In 1877, the first edition of "The Unknown Eros," including twenty-two new odes, was published anonymously (The "Unknown Eros and Other Odes," Odes I—XXXI, London, Bell). Sixteen new odes are added to the 1878 edition, which forms part of a four-volume collective edition (Coventry Patmore, "The Unknown Eros," Odes I—XLVI, London, Bell). The present arrangement of the odes in the Collected Poems occurs in a collective edition, undated, but probably belonging to 1879. ("Poems," Vol. IV, "The Unknown Eros," London, Bell.)

odes of a more natural and less mystical character than Book II. The nature odes, the political odes, and all of the "human" odes of a personal nature occur in Book I; all of the "psyche" odes, the two odes dealing with virginity, and most of those concerned with human love on a frankly supernatural plane are grouped in Book II. The odes dealing with philosophical or poetic problems, or with ordinary spiritual experience, personal or general, are distributed haphazard throughout the two Books.

The odes of Book I may be divided, loosely, into five consecutive groups: i. the nature odes; ii. the human odes (both of these approach love as a premonition of the supernatural); iii. the political odes; iv. the philosophical odes, and v. the odes of spiritual preparation and submission.

Limitation of space imposes on us the necessity of considering only the most significant of Patmore's odes, though there is scarcely one of them which does not add illumination to his thought. We must, too, refrain from a critical examination of the literary merits of "The Unknown Eros," although artistically the poem is the culmination of Patmore's work. In focusing our attention on the intellectual content of the odes, we shall not, however, be doing the poet an injustice; for thought is the life-blood of all great poetry, and Patmore's philosophy, in its moral elevation and suggestive power, constitutes one of his most authentic claims to poetic genius.

The second Book of "The Unknown Eros" offers a richer field to the student of Patmore's mysticism than does the first; but Book I contains a number of odes which illustrate the development of Patmore's thought. Among these the nature odes are not the least significant.

These nature poems, with which "The Unknown Eros" opens, deal respectively with spring, summer and winter. "St. Valentine's Day" is a poem of spring's approach, with snowdrop and the song of the returning bird; "Wind and Wave" is a sea-poem, but a poem of the summer sea, on which falls

the "immeasurable smile" of sunlight and the gay agitations of the breeze; "Winter" describes a world white and brooding, but hiding within itself

> The substance of things hoped for in the Spring,
> And evidence of Summer not yet seen.

Were "L'Allegro,"[3] with its autumnal atmosphere, added to this trilogy, we should have the complete cycle. "St. Valentine's Day" is clearly an allegory of youthful love, "Vestal February," with her unobtrusive beauty and chaste reticence, serving as the symbol of the virginal element in human love, which, like the season's surrender to the resurgence of life, capitulates before "the exceeding sweet of dear desire." "Wind and Wave" describes the striking into bonds of light and color, to form intelligible beauty—as in the flower and in woman, in whom may be seen reflected all that nature has "of sensitively good." Then, again, under the veil of nature symbolism—of the sea, aroused from its repose to cast itself in breakers on the distant beach—Patmore deals with a new development in the soul's life: its awakening to the supernatural significance of love, and its setting toward the goal of a "void sky-line and an unguess'd weal." In "L'Allegro" the human note is stronger than in the three nature odes of "The Unknown Eros"; but in the russet tints of autumn and the richness of harvest are reflected the joys of contemplative thought, the stillness based on certitude, when in the Divine Presence

> . . . sounds of working cease
> In little fervour and much peace.

And, finally, in "Winter," there is the breathless pause; a pause not of interrupted activity, nor of the dissolution of past beauty, but of austere freedom from sensuous forms, alternating with eager preparation for the renewal of life. The purity of first love; its supernatural transformation; the reali-

[3]Poems published in "Amelia," London, 1878

zation of Divine Love through ordinary experience wedded to spiritual contemplation, and the final concentration of its powers in "plenitude of peace" before all things shall be made new: these are the four phases which, without undue effort, we may follow in Patmore's odes on nature.

By a natural transition, Patmore turns from nature, viewed as a parable, to human love, which is both parable and reality. In a group of odes which, for want of a better term, we shall call the human odes, Patmore has dwelt on love as a natural revelation. In these odes ("Beata," "The Day After Tomorrow," "The Toys," "The Azalea," "Departure," "Eurydice," "If I Were Dead," "A Farewell," "Tired Memory" and "Tristitia") he views love in its double aspect of delight and sorrow—though by far the greater number of them deal with love's purifying pain.

Psychologically the odes of loss[4] offer a commentary both profound and revealing on the course and crises of love's development under the compulsion of sorrow. They range in emotion from the shadowy remorse for suspected disloyalty, the startled amazement of love before the interposing indifference of death, and the nightmare agony of loss, to the purity of a passion submissive to separation, and the sense of love's continuity which, like the gold azalea, sheds its perfume across the shadow of death. But though they touch the sphere of great art—they add little, not already present or implied in "The Angel in the House" with its sequel, to Patmore's philosophy of love.

In "The Angel in the House," Patmore made sex-love the source and sanction of social life. The purifying and coordinating power of nuptial love, as fostered in the domestic group, found, he believed, its natural outlet in the wider life of humanity. Thus "the revelation of the sons of God" wrought by human love in the heart of the individual was to

[4]All but the first two of the above group may be so classified, though "The Toys" is rather a poem of paternal love, heightened by loss.

assist in the extension of the Kingdom of God on earth. A poem of Divine Love could not, therefore, neglect the reflex and prophecy of that Love, either in personal or in social relationships. In the human odes, Patmore deals with domestic love; in the political odes,[5] he turns to the implications of that love in "God's remoter service, public zeal."

The sense of incongruity unquestionably created by the position of the political odes in "The Unknown Eros" is due not to their subject-matter, but to their tone. It is difficult to recognize in the flaming anger and shrill remonstrance of the political odes a relation to the tenderness, insight, and austere beauty of the other odes. If Patmore's political wrath had maintained an even tenor of dignity, if his prophecy had shared in the restraint and been tempered by the charity of his best work, it might have been possible to see in it—as Patmore saw—the converse of love: love operative against evil in social organization and public life.

An analysis of Patmore's political philosophy would lead us beyond the scope of our present study; but his contempt for democracy, his distinction of function between the aristocratic and laboring classes, and his emphasis on individual worth rather than on the security of the masses are not unrelated to his nuptial philosophy.

Patmore's political creed is marked by the deepest pessimism; and the group of philosophical odes[6] would seem to corroborate this tendency. The mood and form of these odes are satiric, bitter. And yet, whether Patmore is voicing, in these odes, his disbelief in human progress, or his ironic conviction of the ultimate triumph of truth, "when none cares whether it prevail or not," one is made aware of the calm of

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[5] "1867," "Peace," "1880-1885."

[6] Of the four philosophical odes—all of them satiric in tone—the first three are included in Book I, "Magna est Veritas" and "The Two Deserts" introducing, and "Crest and Gulf" following, the political odes; the last, "The Cry at Midnight," occurs in Book II.

the eternal background against which final issues are wrought out; of the one Power, God's Will, incessantly active,

> Mighty to keep in bound, tho' powerless to quell,
> The amorous and vehement drift of man's herd to hell.

Science, too,[7] he judges on a spiritual plane. As in the philosophy of Patmore, the chief use of matter is to throw into high relief the realities of the spirit; as human love is the symbol of a holier union; so, too, the function of science is to minister to the supernatural by providing it with clarifying analogies.[8] Apprehending God with mystical intensity as the Principle of Being, he sees not only all spiritual existence, but also all natural phenomena and all knowledge, as entirely deriving their value from remoteness or proximity to the Divine purpose. The materialistic trend of nineteenth-century science was not such as to conciliate a mystical poet; and, as Blake would have done in like circumstance, Patmore, when he was not engaged in recriminations against it, passed upon the other side. Yet it was not against science itself that he protested, but against its counterfeit, passing for genuine currency, or against the uses to which true science was frequently put. For between science which remains within its own frontiers, and religion, he admitted no quarrel.[9]

The next group of poems forms a link between the first and second Books of "The Unknown Eros." Patmore, having dealt with the twin revelation of nature and love, and with its extension to social life and to contemporary knowledge in philosophy and science, now turns definitely toward his central theme: the union of the soul with God. He does not, however, rise to his climax without deliberation. The group of odes with which Book I of "The Unknown Eros" closes[10]

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[7]Bk. I, "The Two Deserts"; Bk. II, "Sing Us One of the Songs of Sion," "The Cry at Midnight."

[8]"Religio Poetae," London, 1907; "Love and Poetry," p. 141.

[9]"Ralph Waldo Emerson," "Lowe's Edinburgh Magazine," February, 1846, p. 181. "Rod, Root and Flower," "Knowledge and Science," XXX.

[10]"Let Be," "Faint Yet Pursuing," "Victory in Defeat," "Remembered Grace," and "Vesica Piscis," to which may be added from Book II, "Pain" and "Auras of Delight."

are penitential in character and echo the soul's longing for the supernatural. They are concerned with the soul's upward struggle in the acquirement of virtue—and her steadfastness in the face of physical pain, spiritual discouragement and dryness;[11] with that purification of the will which is the necessary condition of supernatural contemplation. We may, therefore, consider the poems of this group as odes of spiritual preparation.

The soul, now schooled in charity and freed from the worst entanglements of self-love, is prepared for communion with God; and, in the last ode of Book I, "Vesica Piscis," is described that influx of peace which is the signal of God's approach. The ode relates how the poet's labor brought him not "the quick, shining harvest of the sea"—the natural food he sought—but Christ Himself, who, becoming his spiritual sustenance, bade him

> Be dumb
> Or speak but of forgotten things to far off times to come.

Christ now becomes the Master of a life which had hitherto sought direction and confirmation from natural sources: from external nature, from love, from human thought and endeavor. The slow, pedestrian journey is complete, the summit of the Mount of Purgation reached, and the soul is now ready for that swift flight to the stars of which the motive force is grace. Self-reliant effort is now finished; contemplation begun.

In Book II, the poet resumes, on a plane incalculably higher, the soul's celestial pilgrimage. But the progression of mystical love is shown as the realization of the soul's earlier experiences. Hence the division into two Books marks no break in the unity of "The Unknown Eros," but serves merely as the dropping of a curtain between the two great acts of the Divine-and-human drama.

Patmore's nuptial mysticism—though in a sense his own

[11] Cf. Frederick Page, "Patmore's 'Unknown Eros,'" *Catholic World*, September, 1917, pp. 779-780.

through vivid personal realization, the strong seal of individuality which marks it, and its completeness and elaboration —is illustrated and embodied in the works of Catholic mystics throughout the centuries of the Church's life.[12] Humbly and sensibly relinquishing any claim he might have to originality in his doctrine, he acknowledged their writings as the authoritative basis of his teaching. "I make it my only claim to be heard," he wrote, "that these are the sources from which I have derived my matter."[13] The elements of Patmore's philosophic theory may be found scattered broadcast in the pages of various philosophers, especially in those of the Church's mystical writers.

The influence of the mystical Catholic writers is strongly marked in the work of Patmore's closing years. In the joy of his discovery of the Catholic Church's wealth of mystical literature, he plunged eagerly into the works of St. Teresa, of St. John of the Cross, of St. Bernard, and renewed his earlier acquaintance with the "Summa" of St. Thomas Aquinas. Each of these writers supplied to the poet's spiritual philosophy his or her quota of influence.

Patmore's debt to mystical writers was, however, in no sense, limited to the work of Catholic mystics; for Plato and Swedenborg—and we may add Wordsworth—were among those to whom he owed much. According to one of his friends, Patmore had a tendency to view Catholicism as a centripetal spiritual force, and to annex to it whatever accorded with its doctrine.[14] He did not, therefore, hesitate to adopt the pagan myths as prefigurations of Christian truth.[15] Gosse mentions as a favorite belief of Patmore's "that the Pagan myths, even when they seem gross and earthly, contain the pure elements

[12]Cf. Burdette, The Idea of Coventry Patmore, 1921, p. 9.

[13]"Rod, Root and Flower," London, 1923. Preface, p. viii.

[14]Gosse, "Coventry Patmore: a Portrait," *Contemporary Review*, February, 1897.

[15]"Rod, Root and Flower," "Knowledge and Science," XXVII. Champneys, "Memoirs and Correspondence of Coventry Patmore." London, 1900, II, pp. 19-20.

of living Christian doctrine in symbol.'"[16] It is, then, obvious that he should find such elements in "the starry legend of Cupid and Psyche," which was to supply much of the symbolic imagery of "The Unknown Eros."

II

From the philosophical sources of Patmore's work, we may now pass to its underlying principles. In the relation of matter to spirit, Patmore saw spirit as the substance of which material reality was but the shadow;[17] though, in relation to man, a protective shadow, gradually brightening until his eyes, like the eagle's, might look into the sun. Patmore's own apprehension of a spiritual world was intensely vivid. "Things of the spirit," remarks his biographer, "were obviously more real to him than aught perceptible to the senses,"[18] and a certainty, peaceful and profound, underlay all his conclusions, from belief in God to the subtlest inferences of his philosophy of love.[19] He lived in a world of visions no less real that they were intellectual rather than ocular.

The word *mysticism* seldom occurs in Patmore's work. He eschews it as a term vaguely embracing a variety of ideas and denoting the bewilderment of modern "science" in the presence of spiritual truth. Mysticism is to Patmore simply the "true psychology," which studies and interprets the relations of the soul to God;[20] the "science of love," applied to "those realities which are devoutly and substantially discerned by [the] higher order of perception."[21] Such knowledge is,

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[16]Gosse, Coventry Patmore, London, 1905, p. 238.

[17]"Religio Poetae," "Imagination," p. 106.

[18]Champneys, op. cit., II, p. 30.

[19]Greenwood, "Coventry Patmore," Blackwood's *Edinburgh Magazine*, June 1905, p. 821.

[20]"Principle in Art," London, 1912. "A Spanish Novelette," p. 196. "Religio Poetae," "Christianity an Experimental Science," p. 40.

[21]"Religio Poetae," "Christianity an Experimental Science," p. 39.

he maintains, acquired experimentally, by practice, loyal and sincere, of virtue,[22] and by submission to the will of God. This science, by which God becomes manifest to the soul, deals with self-evident reality, and—since its appeal is to "pure reason"—it cannot become the object of discursive reason. "The Babe sucking its mother's breast," wrote Patmore, "and the Lover returning, after twenty years' separation, to his home and food in the same bosom, are the types and princes of mystics."[23]

By "pure reason" Patmore means intuition;[24] and he held that all knowledge worthy of the name (knowledge of spiritual truth) was intuitive, though it might find verification through the evidence submitted by the lower reasoning faculty. "Reasoning," as distinguished from "pure reason" had for him no independent existence; for "all reasoning," he affirmed, "ends in an appeal to self-evidence."[25] Nor did he—disciple though he was of the Angelic Doctor—exalt the role of the rational faculty. "When a thing manifestly is," he asserted, "none but fools will trouble themselves with difficulties as to how it can be."[26] Assertion might be necessary, but proof he thought superfluous in convincing the normal and well-disposed mind to accept essential truths; nor were those who habitually lived in the atmosphere of such truths able to adduce for them satisfactory proofs.[27]

Patmore recognized in the Church the guardian of intuition, whose appeal was to self-evidence,[28] and whose chief function was the corroboration of human consciousness.[29] He believed that if the Church's voice is to be intelligible, what is proclaimed by her must first be spoken in the soul.

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[22]Ibid., pp. 39, 41. "Rod, Root and Flower," "Aurea Dicta," CXII; "Knowledge and Science," IX.

[23]"Rod, Root and Flower," "Aurea Dicta," CXXVIII.

[24]Champneys, op. cit., II, p. 5.

[25]"Rod, Root and Flower," "Aurea Dicta," IV.

[26]"Rod, Root and Flower," "Aurea Dicta," XI, XXVIII, CXVII, CXLII.

[27]Ibid., LXI, LXXIII.

[28]Ibid., LXI, CII.

[29]Ibid., "Knowledge and Science," III, XIV.

Orthodoxy requires that what the soul hears be consonant with the Church's doctrine; but the provision is a mere safeguard against self-delusion; for the actual voice of God in the soul and in the Church cannot prove contradictory.[30]

The main channel of intuition, according to Patmore, is contemplation. Not only must the senses be placed under control, but the mind must be directed toward God, before the soul can receive the fulness of His revelation. Patmore uses the term *contemplation* in no indefinite sense; his use of it connotes, strictly, supernatural contemplation, which in its highest form he defines as the "simple and perceived contact of the substance of the soul with that of the Divine."[31] He sees in pure contemplation the exercise of man's highest faculty, the means of his surest felicity and final perfection.[32] Patmore likens contemplation to "the photographic plate which finds stars that no telescope can discover, by simply setting its passively expectant gaze in certain indicated directions so long and steadily that telescopically invisible bodies become apparent by accumulation of impression."[33] Patience, passivity, fixity of regard: such, Patmore insisted, are the conditions of growth in contemplative understanding. The soul must learn a Divine indifference to the bestowal or suspension of vision, and must wait upon the Lord with an attention that obliterates self. Such attention implies the suppression, so far as may be possible, of external distractions, and even of active service. To such service, contemplation is, in Patmore's view, immeasurably superior,[34] not only in its nature but also in its effects. The soul in seeking its own interests is also seeking those of others; for pure love is more fruitful of good for humanity than the most strenuous physical or mental labors.[35]

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[30]Ibid., X, XIV.
[31]Ibid., "Magna Moralia," XV.
[32]"Religio Poetae," "Real Apprehension," p. 81.
[33]"Religio Poetae," "Real Apprehension," p. 81.
[34]Ibid., "Attention," p. 37.
[35]"Rod, Root and Flower," "Aurea Dicta," I, XXXI.

One of the main problems to be settled at the outset of the mystic's spiritual ascent is the settlement of the respective claims made on his affection by God and by creatures. Must the love of creatures be sacrificed to the love of the Creator, or does the secular love, properly directed, contribute to the holier love? On this point saints and spiritual persons have differed. Some have sought God in creatures, but by far the greater number have approached Him by the path of renunciation of earthly loves; for there are few who can so steadily hold human affection in the ray of Divine Love as to ensure the penetration of the lower by the higher. Patmore, it has commonly been thought, chose the less usual method, that of attaining to God through creatures. This appears to be true, however, only in a limited sense—as regards the lowest and highest reaches of his spiritual experience. In "The Angel," the question of rival claims had already asserted itself; and Patmore had determined that the revelations of human and Divine love were not in conflict; that, indeed, the one was the prefiguration of the other. But it becomes clear, both in the odes of "The Unknown Eros" and in the later prose works, that this phase—so important in Patmore's philosophy—was not the final one in his spiritual life. True, after the momentary hesitation in "The Angel," Patmore never admitted any inherent contradiction between love sacred and secular.

But, in his own experience, the revelation of sorrow superseded that of love; and, through loss, Patmore learned that the earthly tie, spiritual though it be, must be sacrificed to a love, not different, but higher in its nature; that human love prepares for union with God, not merely in Heaven, but also on earth. In the odes, the evolution of Patmore's doctrine of "detachment" may be best traced in "Tired Memory" and "A Farewell"; but its final form finds more complete expression in "Rod, Root and Flower." Here Patmore states that "all men are led to heaven by their own loves; but these must first be sacrificed."[38] But though the sacrifice be made, of necessity,

[38] "Rod, Root and Flower," "Aurea Dicta," CVI.

in ignorance of the result, that result is inevitable. The love of God, for which the soul dared not barter, descends upon her like a flood, bearing back on its tide—an eventuality which the soul had not even dimly foreseen—the human loves which she had abandoned for His sake.[37] The lesser goods have now become intelligible through their perceived relation of shadow to substance,[38] and, paradoxically, have acquired increase through the possession of the greater love and good.[39]

It will be seen that this later development of Patmore's theory of spiritual progress effects a reconciliation between the two views above referred to. The solution is, of course, not original with Patmore; but, like all his spiritual perceptions, it bears the sign of intense personal experience and passionate conviction.

For Patmore, mysticism had about it none of the vagueness or levity of its modern counterfeit. His was no uncertain philandering with truth, but a serious intellectual and spiritual activity, to which (true poet though he was) the claims of poetry were inferior. In mysticism, as in poetic art, he was a realist. His mysticism was constructive and concrete. Spirituality he saw as "a real ardour of life," not, as it is often thought to be, a negation of life. With his dislike of analytical reasoning was coupled an antipathy to everything abstract, "abstract virtue, abstract truth, and all other abstractions, which," he held, were "the delight of philosophers, and . . . of devils."[40] Despite his abhorrence of science, he carried the scientific temper into his spiritual researches; for, as we have pointed out, these were experimental in their methods, their data being derived from experience, and their conclusions therefore based on the actualities of life and human nature. The relation of Patmore's mysticism[41] to ordi-

[37]Ibid., "Magna Moralia," XXVIII, XLV.
[38]Ibid., "Knowledge and Science," XV.
[39]Ibid., "Aurea Dicta," XCVII; "Homo," XXIV.
[40]Champneys, op. cit., I, p. 253.
[41]*Cf.* "Gold from a Poet's Treasury," *Saturday Review*, November 16, 1895, p. 659.

nary fact is of great moral significance, as increasing the potential influence of mystical ideals in the life of the average man. Nor is his meaning delivered in cloudy oracles. His utterance, when dealing with exalted spiritual truth, reflects the qualities of his thought: it is brief, pointed, exact. His religious mood corresponds to the directness of his thought and the simplicity of his speech: it has none of the feverish or insipid quality of the false mysticism he detested, but is marked by meditative calm and concentration. Patmore the mystic is never anything but Patmore the man, at the height of his powers. Transported he may be to the seventh Heaven, but not "out of the body," and the vision which he sees, he sees with human eyes.

Aquinas and the Missing Link in the Philosophy of History

MOORHOUSE F. X. MILLAR, S.J.

MAN is essentially a historical being.* Not only does he exist in time, subject like all things temporal to constant and irreversible change, but in his character as a human individual and social being he is inevitably dependent in ways that are most intimate to his own welfare and development upon a knowledge of the past. In its most fundamental aspect this dependence takes the form of tradition. This, as Maurice Blondel describes it most effectively,[1]

> conveys much more than ideas susceptible of logical formulation. It embodies a life that involves, all in one, sentiments, thoughts, beliefs, aspirations and deeds. It hands on in a kind of fruitful contact that which successive generations must become imbued with and in turn impart as a permanent condition to a vivification and participation in a reality that admits of being drawn on indefinitely by individual and successive effort without itself being thereby exhausted. Hence it implies a spiritual communion of souls that feel, think, and will within the unity of a single patriotic or religious ideal. It thus remains a condition of progress insofar as it allows of certain portions of the truth, that as a whole can never be completely defined, to be made to pass from a state of being implicitly lived to that of being explicitly known. For, as the principle of unity, continuity, and fecundity, tradition which is at one and the same time initial, anticipative, and final, precedes all attempts to effect a synthetic reconstruction and survives every endeavor to subject it to searching analysis.

This brilliant bit of intuitive insight and reasoning should, I take it, bring home to us how actual, in its most fundamental

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[1]Lalande, *Vocabulaire de la Philosophie*, Vol. II, p. 899.

and irreducible form, is our dependence on the inheritance that accrues to us from the past. It suggests, furthermore, how important is the function of sound and accurate history, and how necessary it is to supplement this with a sound and adequate philosophy if progress and development are to be achieved as they can be only on the basis of what is true and genuine in our tradition. As Vico puts it, with a wisdom that has but recently come to be fully appreciated:[2]

> Philosophers stopped half way in their neglect to give to their reasonings a certitude that should derive from the authority of philologues (who study the acts of human freedom), while the philologues fell into the same error in that they neglected to give to facts the character of truth which might have been derived from philosophical reasoning. If philosophers and philologues had avoided this double reef they would have been of greater service to society.

If the truth of the first part of this observation is borne out by what we can now see to have been the consequence of the neglect of the study of critical history in the later Middle Ages, evidence in support of the second point is being only too amply supplied in our own experience at the present moment by what is seen to have resulted from an exclusively positivistic concern with facts, whether of science or of history, to the utter neglect or sad perversion of philosophy. Not that much was not gained as a result of this emphatic positivism, for well-authenticated critical history itself grew out of it, and, although in the early stage of achievement, its contribution to the cause of philosophy in the well-developed field of the history of philosophy cannot be overestimated.

But in its attempts to revive the thoughts or deeds of men in the past the true function of history, as such, is to reconstruct that past in all its apparent chaotic reality.

> Without this creative revival, without this conscious reproduction, past culture would after a time disappear completely from the sphere of our ex-

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[2] *Principes de la Philosophie de l'Histoire, traduits de la Scienza Nuova de J. B. Vico*, by Jules Michelet, p. 30.

perience: it would lose almost entirely its realness without being exactly annihilated.[3]

Yet in thus recreating preexisting reality, the historian cannot presume to rely on ideally theoretic scientific laws. For there can be no laws of human history in the scientific sense, owing to the fact that its course is so largely determined by the free agency of men. Where science is concerned with abstract, generally, and uniformly recurring phenomena, history is intent on attaining to an insight into the intelligible significance of concrete, singular and unique facts and events with all their original and peculiar determinations in time and space. We can understand the law of gravitation without being able to grasp intelligibly what the nature of gravity is, but we have a firsthand, intelligent experience of the nature of free human choice and determination, and this is the key of history.

Hence those historians who would reduce history to the level of natural science, insisting that we should confine ourselves to a purely phenomenal aspect, and consider facts and events in human history, only, as it were, from without, take an all-too-narrow view of their subject. Such a prejudice is clearly a manifestation of the modern superstitious belief in positive science as the only valid form of human knowledge. On the other hand, it still remains true that history itself,[4]

cannot furnish us with a universal theoretic order of concrete reality independent of its practical organization and superior to all special scientific orders, since in so far as it is theoretic it must treat concrete reality from the standpoint of some abstract and special scientific order; whereas in so far as it tends to embrace reality in its historical concreteness, it is not theoretic and does not order it at all.

I

But the question still stands as Vico originally put it as to the mutual relations of history and philosophy. And our own

[3]F. Znaniecki, Cultural Reality, p. 322.
[4]Ibid., p. 325.

point is, can history advance beyond the stage of a merely bewildering erudition without presupposing or being supplemented by philosophy? Alfred North Whitehead, in his recent work, "The Adventure of Ideas," insists only too truly, in criticism of the positivist theory:[5]

> No science can be more secure than the unconscious metaphysics which it tacitly presupposes. The individual thing is necessarily a modification of its environment, and cannot be understood in disjunction. All reasoning apart from some metaphysical reference, is vicious.

And again:[6]

> Speculative extension beyond direct observation spells some trust in metaphysics, however vaguely these metaphysical notions may be entertained in explicit thought. Our metaphysical knowledge is slight, superficial, incomplete. Thus errors creep in. But such as it is, metaphysical understanding guides imagination and justifies purpose. Apart from metaphysical presupposition there can be no civilization.

How true these observations are in their application to history only a little reflection will show. The one fundamental and all-conditioning factor in human history is human nature. This being the case, it is clear that, in the endeavor to reconstruct the past on the basis of such recorded thoughts or deeds as may be available, the entire process of necessary selection and interpretation is bound to be wholly colored and determined by the assumptions the historian cannot but make in one form or another, whether explicity or implicity, in respect to human nature. Such assumptions are definitely in the realm of metaphysics, and come within the control, not of history itself or of historical method, but of philosophy.

As we look back over the course of the development of history, as a separate branch of knowledge, it is possible to pick up some of the main philosophical assumptions that were made in the past and note their effect upon the manner in which history was considered and interpreted. To begin

[5] Ibid., p. 197.
[6] Ibid., p. 163.

with the Greeks and the Romans, it is interesting to observe that while the former, in the two singular instances of Plato and Aristotle, discovered the human intellect as something transcendent to the bare physical forces of nature, the latter, owing to the analytical work of the great lawyers, influenced largely by Greek Stoicism, discovered the human will in the guise of a physical tension underlying all customary and legal formalism.

But the Greeks remained too exclusively intellectualistic[7] and the Romans too exclusively voluntaristic,[8] for either to appreciate the intrinsic significance of singular, human facts and events that constitute the subject-matter of history. Neither could free themselves sufficiently from the naturalism that conditioned all the thought of antiquity and, insofar as it was controlling, meant a denial of the very possibility of history as we know it. It was only in the light of Christian Revelation and on the basis of an assimilation of what the pagan world had already contributed, that man for the first time was seen clearly as a free intellectual and moral agent, the master of his destiny and responsible for human conditions and the course of human events.[9] But even in the writ-

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[7]L. Laberthonniére, *Le Réalisme Chrétien et l'Idéalisme Grec*, Ch. 2. J. Chevalier, *L'Idée et le Réel*, pp. 11, 12. R. Jolivet, *Essai sur les Rapports entre la Pensée Grecque et la Pensée Chrétienne*, p. 75.

[8]P. Lejay, *Histoire de la Littérature Latine*, pp. 39 seqq.

[9]For the attitude of the Middle Ages in respect to history see Gilson's *l'Esprit de la Philosophie Médiévale, 2ième série, Ch. 9.* As he says: "The idea of progressive change was most forcibly formulated by St. Augustine and the Christian thinkers who were inspired by him. It was a new idea, for neither in Plato, nor in Aristotle, nor in the Stoics, was found this notion, so familiar today, of a humanity conceived of as a unique collective being, composed to a larger extent of dead than of living, on the way, and in constant progress, towards a perfection which it ceaselessly approaches. Ordered and completely permeated by an intrinsic formality, one might almost say by a unique intention, the succession of generations in time finds not merely a real unity; by reason of the fact that it henceforth offers itself to thought as something other than a succession of accidental happenings, it takes on an intelligible sense, and that is why, even though one should reproach the Middle Ages with having lacked the historic sense, it would at least be necessary to grant them the merit of having done everything to aid the beginnings of a philosophy of history. Let us go further, and say that they had one, and, to the extent that it still exists, ours is more deeply penetrated than we think by medieval and Christian principles."

ings of St. Augustine and, with the singular exception of St. Thomas, throughout the Middle Ages, we cannot but be struck, from the point of view of our present considerations, by a great inadequacy. The emphasis, though not exclusive, so as to savor of the later heresies of the Reformation, was none the less explicitly and affirmatively placed on the infinite condescension of Divine Providence to creatures and to fallen man in particular, rather than on man's essential nature as the fundamentally conditioning or formally causal factor in the Divine dispensation and disposal of human affairs throughout the course of history.

Such an attitude, as we are now coming to realize more clearly, proved of untold value to human progress. It gave the one solid foundation for the medieval conviction in the objective ascertainability of truth, which led not only to the development of scholastic philosophy but to the invention of such means as the jury system, majority decision, and representative government as methods of procedure for the approximate ascertaining of the truth in the more practical order of law and justice. Both these manifestations in medieval cultural growth clearly presuppose a firm, if implicit, belief in the fundamental soundness of human nature in its formal rationality.

But what Gilson has recently pointed out remains true:[10]

> It would appear that for St. Augustine and his followers, metaphysical essences are not definitely distinguishable from their status as this is willed by God; as if beings were to be defined by the states decreed for them rather than by their natures or at least as if the decreed status of beings were really integrated with their nature and in no way distinguishable from it.

From such a point of view it is readily seen why the pre-

[10] *Archives de l'Histoire Doctrinale et Littéraire au Moyen Age*, 1932, p. 31. As Gilson points out, God for St. Augustine is *naturarum Auctor*. "He administers the natures of things in such a way that they retain the power to fulfil their own proper operations." But it remains that the Augustinians put the emphasis upon the Divine decrees. For St. Bonaventure's attitude toward St. Thomas' theory of secondary causality, see A. Forest, *La Structure Métaphysique du Concret selon S. Thomas d'Aquin*, p. 118.

dominant concern should have been to seek rather to "justify the ways of God to man" with little or no curiosity as to the natural human significance of past events considered critically in their historical development. On the other hand, it is highly important to realize that this grave inadequacy in the traditional Augustinian point of view did not escape St. Thomas. With the calm independence and clearsighted originality that was so peculiarly his he set forth in definite terms the proper and necessary corrective. As he insists:[11]

> If effects be produced not by the act of creatures but only by the act of God, the power of the created cause cannot possibly be indicated by its effect; since the effect is no indication of the cause's power except by reason of the action which proceeds from the power and terminates in the effect. Now the nature of a cause is not known from its effect except insofar as this is an indication of its power which results from its nature. Consequently, if creatures exercise no action in producing effects, it will follow that the nature of a creature can never be known from its effect.

Had this doctrine in its universal application become generally accepted in the later Middle Ages, we would not now be witnessing that unnatural divorce between philosophy and science, and philosophy and history, which Vico, as we saw, already deprecated in his day and which still confronts us as, perhaps, the one outstanding intellectual problem of present times. If, when historical curiosity was definitely aroused as a result of the new interests evoked by the Renaissance and Reformation movements, scholars commonly had learned to judge of things in the light of St. Thomas' great fundamental principle of act and potency, their controlling assumptions in the interpretation of human events, of human institutions, and of the deeds of men generally, would have come closer to the sounder view of human nature which Browning gives us in a passage highly suggestive of that principle insofar as it is found verified in man:[12]

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[11] *Cont. Gent.*, I, 69.

[12] A Death in the Desert.

Man knows partly, but conceives beside,
Creeps ever on from fancies to the fact,
And in this striving, this converting air
Into a solid he may grasp and use,
Finds progress, man's distinctive mark alone.
Not God's and not the beasts': God is, they are,
Man partly is and wholly hopes to be.

II

But this was not to be. Instead of any general acceptance of St. Thomas' philosophy of man, the trend proved more and more towards the maintenance of the easily perverted Augustinian view. In the hands of the Reformers this took the ominous shape of the Protestant doctrine on original sin, which, in conjunction with the pessimism of such neo-pagans as Machiavelli and Hobbes, gave rise to a prevailing assumption that human nature is radically vitiated, which in effect amounted to nothing short of a sweeping denial of anything intrinsically normal in human affairs.

On this basis, in Milton's characteristic phrase, "reason is but choosing," and all things human are considered as no more than a manifestation of the purely arbitrary on the one hand, or of repressive force on the other.[13] Although still with us, as may be observed in the writings of such men as Kierkegaard and Spengler, such an assumption could not go unchallenged. For, as Whitehead declares:[14]

> You cannot consider wisdom or folly, progress or decadence, except in relation to some standard of judgment, some end in view. Such standards, such ends when widely diffused constitute the driving force of ideas in the history of mankind. They also guide the composition of historical narrative.

But the trouble in modern times ever since the Reformation and the Renaissance is that such standards and such ends have remained in a state of dissociation without any proper

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[13]Further evidence of this state of mind is supplied by Pascal. See J. Maritain's remarks on this head in *Réflexions sur l'Intelligence*, p. 160 seq.

[14]Op. cit., p. 5.

foundation in human nature as specifically or formally determined. In the reaction from the Protestant and Machiavellian assumption of the utter indeterminism of man's nature, which synchronized with the development of the new physical sciences and with a wider interest in the ancient classics, it was but an easy and ready matter for men of the type of Bodin, Althusius, and others, trained as they were in the tradition of Roman law, to fall back in their handling of history on the assumption furnished by such favorite authors as Cicero and Seneca. Ever since this revival of pagan naturalism, the modern mind has been juggling in many and varied ways with the old stoic antimony between nature and reason.[15]

But as things developed, this revived antithesis has worked itself out into the glaring opposition between a realistic naturalism, on the one hand, that "considers free creation a psychological illusion" and denies "the ideal validity of those same principles of thought and standards of practical valuation which it tries to deduce genetically from natural reality";[16] and, on the other hand, a decidedly modern form of subjective idealism which, beginning more definitely with Kant,[17] took its stand on a blind faith in some undefinable rational purpose that transcends human reflection and is assumed to be gradually but inevitably realizing itself in the course of history. But this is a negation of the very possibility itself of anything like human history. It denies all concrete reality and singular significance to those very facts and events with which history is necessarily and primarily concerned.

Thus on either assumption, whether that of the naturalist or of the modern idealist, man in his formal being, as St. Thomas proves him to be, with intellect capable of appre-

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[15]Pradines, *l'Erreur Morale*, p. 222.

[16]Znaniecki, op. cit., pp. 6, 4.

[17]A. S. Pringle-Pattison, The Philosophy of History, Proceedings of the British Academy, Vol. XI.

hending the intelligible in the actual and reality in the ideal, and with free will whereby in the light of the ideal he is able, according to the inherent exigencies of our specifically common human nature, to rise above and control, dominate and shape his condition and circumstances, is completely eliminated from all due consideration. But meanwhile, as Florian Znaniecki, lecturer in Polish history and institutions at the University of Chicago, has pointed out in a somewhat lengthy paragraph in his very stimulating book, "Cultural Reality":[18]

> By one of the most curious failures of observation ever found in history, neither the theorists nor the men of practice involved in this great struggle have ever noticed how, alongside with the gradual development, unification, and systematization of naturalism, there had grown slowly, but ceaselessly, an independent domain of concrete theoretic and practical problems at least as wide as that covered by natural science and technique, but remaining completely outside of the entire opposition of idealism and realism and implying a view of the word entirely different from both. We mean, of course, the domain of investigations and practical problems concerning human culture in its historical past and its actual development—politics, economics, morality, art, language, literature, religion, knowledge. Certain schools of psychology and sociology have tried to reduce cultural evolution to natural evolution; but, as a matter of fact, this reduction remains only a postulate and . . . the essential and objectively significant side of cultural life remains forever inaccessible to naturalistic science. On the other hand, certain idealistic currents appealed to history for help in determining the content and the meaning of the absolute values which they exposed and defended; but they did not see that the historical and absolutistic standpoints are irreconcilable by their very logical essence and that to search in history for a justification of any absolute values is simply self-contradictory.

Those who have had occasion to follow the latest developments in the social sciences will know, of course, that such a reaction to the mutually exclusive point of view of the naturalist and of the idealist is by no means peculiar to Professor Znaniecki. In the demand for a more spiritual and humanistic approach we find the same insistence in the writings of sociologists such as McIver, Urwick, and Christopher

[18] Op. cit., pp. 7, 8.

Dawson in the English-speaking world, of Max Weber and Jaspers in Germany, and of Wilbois, among many others, in France and Belgium. But where Professor Znaniecki is particularly happy and exceptional is in his treatment of this newer issue as it presents itself to "the historians and active and conscious builders of culture." The time has come, as he points out, for us "to search for some new view of the world, more comprehensive, more productive and more able to grow by creative additions."[19]

But there can be no substitution of a newer and sounder view of things "unless such a view has already been developing in concrete intellectual life and is sufficiently mature to find explicit expression in an intellectual ideal." In other words, we must first take our stand on cultural experience as something distinctively human if we would meet up with the first necessary condition of true progress as defined for us at the beginning by Maurice Blondel. As far as the phenomena and their analysis, in this distinctive realm, are concerned, the accumulation of materials during the past few centuries has become enormous. What appear to be lacking are the distinctive principles that would enable us to effect a synthetic reconstruction on a truly philosophical and human level. It is precisely in this respect that, owing to the many erroneous assumptions made in the past and still maintained traditionally regarding human nature, we now find ourselves so inadequately prepared. As Znaniecki observes:[20]

> This inadequacy manifests itself chiefly in two respects. First, we lack laws of cultural becoming which would give us means of controlling the cultural world as we control the natural world. Secondly, we lack objective and applicable standards of appreciation of cultural values which would permit us to organize the aims of our constructive activities so as to avoid wasting our energies in useless fights and destroying almost as much as we create.

Because of this twofold lack, we are again confronted by a skepticism with regard to human affairs strangely similar

[19]Ibid., p. 10.
[20]Ibid., p. 12.

to that which St. Thomas detected as latent in the assumption explicitly made by the Mottecalemin in his day, and which, as we saw, he pointed out as dangerously implicit in the doctrine of those who professed to abide by the teaching of St. Augustine—the assumption, namely, of the radical indetermination of human nature considered intrinsically.

Faced with the futility of trying to reduce human history and human culture to laws of natural science, the historian and theorist of culture are led to proclaim that historical and cultural change must be considered as wholly inaccessible to any method of determining the laws of historical or cultural development.[21] The modern philosophers and builders of culture, on the other hand, convinced by the failure of the idealists' attempt to apply their absolute valuations to history and cultural experience, without further ado settled down to the opinion that history and concrete cultural life are impervious to any standardization of hierarchical treatment; in short, that they present nothing but "a chaos of valuations whose only justification is their existence."[22]

III

St. Thomas' simple answer to all such tergiversations is that man is both determined and indetermined: determined formally and intrinsically as to his end, yet self-determining in respect to the manner and means of prosecuting that end. As he brings out clearly in his "Commentary on Aristotle's Ethics":[23] "Man's end is determined for him by nature, but with regard to the means to that end, these are not determined for us by nature itself, but are to be discerned by reason."

This end is none other than human perfection, for, as he says:[24] "All men desire to achieve their perfection."

Hence with human nature intrinsically determined to hu-

[21]In this connection an interesting controversy arose in consequence of P. Valéry's remarks in *Regard sur le Monde Actuel*, p. 63 seq., which were taken up by A. Lebey, among others, in his brochure, *Nécessité de l'Histoire*.

[22]Znaniecki, ibid., p. 12.

[23]Lib. VI, 1, 2.

[24]Sum. Theol., I, II, q. 1, a. 7.

man perfection as its end, we can readily see philosophically how this becomes the one dominant directive idea throughout the whole course of historical and cultural development. On this basis, as Sertillanges points out:[25]

> We shall observe that industry, art, inventions and creations of every kind find in this their philosophical interpretation, as does likewise all morality. The autonomous soul is reflected in the soul as it informs the body, and thereby in the body itself and in the body's actions, and through these it is reflected in the external world which it organizes. A land that is cultivated, a tree that is cut, a house, a city, a country and the whole of civilization itself are but the soul of man embodied in material form, a sort of enlargement of his being which man has provided and, as it were, an extension of self by way of a diffusion of his own immanent ideality. But the greatest and highest creation of man is man himself, in whom the two orders of creativeness may be found to meet. Not being able to act on the external world except by acting on ourselves, it is inevitable that we should find in this endeavor as relative to ourselves the highest conditioning factor in respect to the other. It also follows of necessity that the human significance of our exterior deeds and productions should be considered as given by that immanent principle whence they derive.

Insofar, however, as this may be said to give us the key to history, three points are to be noted. Neither is it all a matter of will solely, nor is it a matter of intellect alone, nor is it purely a matter of the two combined, except insofar as both presuppose the transcendence of the reality of human perfection in relation to which each individual human being is intrinsically determined, and in which each may participate, and which, as Blondel stated, "admits of being drawn on indefinitely by individual and successive effort without itself being thereby exhausted." As we look back over the past, the many signs of genuine progress, when judged in the light of this ideal, are manifest. As St. Thomas adduces in respect to changes in positive law:[26]

> There may be two causes for the just change of human law: one on the part of reason; the other on the part of man whose acts are regulated by

[25] *S. Thomas*, II, p. 290.
[26] Sum. Theol., I, II, q. 97, a. 1.

law. The cause on the part of reason is that it seems natural to human reason to advance gradually from the imperfect to the perfect. Hence in speculative science, we see that the teaching of the early philosophers was imperfect, and that it was afterwards perfected by those who succeeded them. So also in practical matters; for those who first endeavored to discover something useful for the human community, not being able by themselves to take everything into consideration, set up certain institutions which were deficient in many ways; and these were changed by subsequent lawgivers who made institutions that might prove less frequently deficient in respect to the commonweal.

What is thus true of law would, by St. Thomas, be held to be equally true of religion, philosophy, art, and human speculative achievement and practical endeavor generally. This being so, it would seem clear that in the light of St. Thomas' philosophy of man the historian will find a sound basis for the philosophical control of his assumptions in respect to the nature of man which will prove adequate to his task of penetrating behind the mere phenomena to the spiritual facts which are the real causes in historical development. As Chevalier says, very much to the point:[27]

The historian who studies a human fact in its setting, and who endeavors to give an account of it, should recognize in it the presence of a historical idea not reducible to the conditions in which it is realized. This idea, which is the fact itself, is, without doubt, called forth and modified by diverse circumstances; but at bottom, in its essence, which is spiritual and moral, it is not determined by these circumstances and is certainly not explained by them.

Hence, to sum up in the words in which Chevalier concluded his paper read at the Proceedings of the Seventh International Congress of Philosophy, held at Oxford, 1930, and entitled *De la signification des faits*:

Neither sociology, nor economics, nor even psychology, can provide history with its principle; it is in metaphysics alone, and in a metaphysics based on facts, that history can find it. And it is because history is the most metaphysical that it is the most real of sciences, that science which introduces us the most directly to the very heart of facts.

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[27] *Pour une Science de l'Individuel*, p. 21.

Book Reviews

The following books have been chosen for review because they are judged to be contributions which are likely to exert an influence or which manifest a distinctive trend in a definite field of knowledge.

THEOLOGY

CHRISTIAN MARRIAGE: AN HISTORICAL AND DOCTRINAL STUDY. By George George Hayward Joyce, S.J. London and New York: Sheed and Ward, (Heythrop Series: 1.) Pp. xiv, 632. $5.00.

The difficulty of the task undertaken by Father Joyce may be estimated from the scope of his subject—a historical and doctrinal study of Christian marriage. Marriage as a natural institution going back to the dawn of the human race transcends the limits of historical research, and is presented clearly in its origins only by the inspired history of Genesis. This same natural institution, elevated by our Lord Jesus Christ to the dignity of a Sacrament, has for eighteen centuries been not only a subject of doctrinal development, but also the object of varied civil and ecclesiastical legislation; at times a bone of controversy, always an index of social conditions, and often intimately associated with important events in the world's political history. To trace this complex and extended pattern was a gigantic task; and Father Joyce has accomplished it with a distinction which is representative of the best traditions of Catholic scholarship.

The first chapter, which is devoted to "Marriage and Natural Law," illustrates two outstanding merits which recur frequently throughout the book: a discerning clarity in the exposition of doctrine, and a temperate vigor in the refutation of subversive theories. The first instance occurs in discussing the question whether the absolute prohibition of divorce is demanded by the Natural Law. After stating the reasons for the affirmative side, which he holds, the author continues (p. 30):

> Yet as we have already said, on this subject theologians are not unanimous. There are some eminent names on the other side. Saint Robert Bellarmine, Suarez, and Sanchez, and in more recent times Palmieri, give it as their opinion that the absolute prohibition of all divorce is a matter of divine precept, but is not demanded by the law of nature as such. Saint Thomas and others of the great mediaeval theologians took the same view. We believe they were mistaken. In our judgment they failed to take into consideration how inevitably such exceptions would entail

the complete destruction of the general law. If this be recognized, it becomes evident that nature herself demands that the law be maintained with absolute strictness.

The second instance is the refutation, in a few discerning pages, of the theory which ascribes the institution of marriage to evolution from primitive sexual promiscuity.

Although the thirteen chapters deal with distinct aspects of the subject rather than with historical periods, the development of each subject is largely historical; and one may say that the entire work is, as its title indicates, predominantly a historical study. The doctrine is presented against the background of history, so that the history, which is given in considerable detail, illustrates both the stability and the development of the doctrine.

The work is not a canonical treatise. The canonist will find in it a wealth of well-ordered detail on the historical development of various aspects of the canon law on marriage; but he will not always find the various canonical subjects which are connected with marriage, e. g., consent, impediments, revalidation, dealt with ex professo. A notable exception to this remark is Chapter III, which deals admirably with the history of clandestinity from before the Council of Trent up to the Code of Canon Law. In general, one is at first inclined to regret the absence of an even closer coordination of the doctrine with the canons of the Code, or perhaps the absence of an even greater emphasis on the Code as the culminating point of the historical development of doctrine. But it is questionable whether such coordination and emphasis could have been obtained without sacrificing to some extent the other admirable merits of the book. After all, this work is not intended merely as a practical handbook of canon law. It goes much deeper; and it does the deeper work remarkably well.

The scriptural proof of the sacramental character of marriage is based on a thorough analysis of Saint Paul's Epistle to the Ephesians, v, 22-32, and not merely on the term used by Saint Jerome in the Vulgate translation of verse 32, ***sacramentum hoc magnum est.*** Let us quote two nice paragraphs on this subject (p. 156):

The Reformers, as is well known, denied that Scripture provides any support for the doctrine that marriage is a sacrament. Protestant commentators, therefore, deny that the words, "This mystery is great" refer to the comparison between earthly wedlock and the supernatural relation between Christ and the Church. The mystery, they maintain, belongs solely to that higher union, and does not relate at all to human marriage. It is hardly necessary to point out that this is to break the thread of Saint Paul's reasoning. If the verse affirms the resemblance of the earthly and heavenly unions, it takes its place in a consecutive argument. If it refers solely to Christ and the Church it is absolutely abrupt.

It has long been a commonplace of Protestant controversy to maintain that the doctrine of Marriage as a sacrament is derived from a misunderstanding of the Vulgate text, *Sacramentum hoc magnum est.* No proof of the assertion is ever

offered: and none is possible. The history of dogma lends it no support. It is true, doubtless, that some mediaeval writers employ the text in this sense. But they did so because they knew from the age-long tradition of the Church that Marriage was a sacrament. They did not hold Marriage to be a sacrament because of these words in Saint Jerome's version.

One of the most interesting parts of the book is that which discusses the doctrinal justification for the law, "Tametsi," of the Council of Trent, requiring the assistance of the pastor and two witnesses for the validity of marriages. Father Joyce here departs from the opinion which we believe is still the one more commonly held, that the Church cannot substantially alter the sacramental symbols of any of the Sacraments (p. 129):

Historical investigation has made it more and more difficult to maintain the thesis that the Church has never made substantial changes in the effective rite of some of the sacraments. Confirmation and Extreme Unction afford conspicuous examples. Hence several recent theologians of recognized competence have not hesitated to defend the opinion that the Church has authority to determine the sacramental symbols of all the sacraments except Baptism and the Holy Eucharist: and that at Trent she exercised this power as regards Matrimony. This view was, in fact, as we have seen, explicitly adopted by some of the fathers of the council: and to the present writer seems to afford the most satisfactory justification of the step taken. Neither of the grounds usually alleged is free from difficulty. If the sacrament, as all are now agreed, is identical with the contract and not an extrinsic addition, it is hard to see how it is possible to treat the latter as though it were prior to the former. Yet, if the annulment of the contract be the reason why the rite is devoid of sacramental value, the two must be logically entirely distinct, the contract furnishing a foundation which can be dealt with as such and apart from its nature as a sacrament.

In a footnote at this point the objection is pressed still further:

Wernz endeavors to escape the difficulty by saying that the contract appointed by Christ as the sacrament of Marriage is the *contractus legitimus*. The explanation was first given by Pontius: and it would be admissible if, as he maintained, the contract of marriage were a civil contract. But it is now agreed that in marriage we are concerned, not with a civil, but with a natural contract. That being so, to say that the contract must be a *contractus legitimus* does not help us. We are left without an explanation of the manner in which the Church can restrict the forms of the contract without touching the sacrament.

Personally we are not entirely convinced by this reasoning. Whatever may be the historical difficulties in the cases of Confirmation and Extreme Unction, it does not seem absolutely necessary to attribute to the Church power directly over the matter and form of the Sacrament of Matrimony, in order to explain the law of "Tametsi." Wernz's explanation, which is the one given also by Vidal and Cappello, still seems to us to have something in it. Certainly the contract and the Sacrament are in reality one and the same thing; yet they are logically quite distinct. The contract may thus be conceived of as prior

to the Sacrament, not in time, but logically, in the sense that it is in reality the foundation of the Sacrament. What the Church has done is to prescribe formal conditions for the legitimate expression of consent. The consent thus expressed constitutes both the contract and the Sacrament. Wernz's explanation does not pretend that the Church can restrict the forms of the contract "without touching the sacrament"; all it seeks to do is to show that it is still possible to explain the historical facts without claiming for the Church *direct* control over the matter and form of the Sacrament. And this is done when it is shown that Christ constituted the matter and form of the Sacrament in the legitimate expression of matrimonial consent between Christians. For then the Church would have, from Christ, a certain latitude in determining legitimate conditions for the expression of consent; and the use of this power would affect directly the natural contract of marriage, indirectly also the Sacrament, but without substantially changing the matter and form of that Sacrament as constituted by Christ.

We are not, of course, arguing against Father Joyce's own explanation of the change, which he supports by citing several respectable modern theologians. That explanation may be the true one; and it is certainly simpler than the one offered by Wernz and perhaps the majority of the theologians who have written on the subject. We have only registered our protest against abandoning Wernz's explanation as if it were entirely untenable. It still seems valid to us, though somewhat subtle. But Father Joyce's treatment of the point may serve to illustrate his independence of judgment and his modesty and vigor in the pursuit of details of doctrine.

The last point of detail which we will permit ourselves to discuss occurs in Chapter XI, No. 4, under the head of "Divorce by Papal Dispensation."

As is well known, one of the most interesting and theoretically difficult points in the canon law of marriage occurs in canon 1125, which provides:

> The provisions relating to marriage in the constitutions of Paul III *Altitudo*, 1 Jun., 1537; of St. Pius V *Romani Pontificis*, 2 Aug., 1571; and of Gregory XIII *Populis*, 25 Jan., 1585, and which were enacted for special localities, are now extended to other regions also in the same circumstances.

The three Papal constitutions which the canon cites may be very briefly summarized as follows:

a) Constitution of Paul III, "Altitudo," 1 Jun., 1537: A man during infidelity had several infidel wives. If, upon his conversion, he does not remember which one he first married, he may choose and retain any of his wives, renewing matrimonial consent (because of the doubt); if, however, he remembers which of his wives he first married, she alone is and remains his lawful wife.

b) Constitution of Saint Pius V, "Romani Pontificis," 2 Aug., 1571: A

man who in infidelity had several infidel wives, upon his own conversion retained one of them (not necessarily the first) who received baptism with him. This practise the Holy See now declares valid and licit both as regards the past and the future, *"certa scientia et apostolicae potestatis plenitudine."*

c) Constitution of Gregory XIII, "Populis," 25 Jan., 1585: Persons married in infidelity have been forcibly separated (by the slave trade) and one of them has now received Baptism. If he or she now wishes to marry a Christian, and it be proved that the "interpellation" of the absent infidel consort be now difficult or impossible, or if such "interpellation" has been made and no answer has been received, faculties are granted to Ordinaries, pastors, and to priests of the Society of Jesus approved for confessions, to dispense the baptized party so that he (or she) may now marry a Christian without any "interpellation" of the former partner. And such second marriage is declared valid even though it afterward appear that the former partner was prevented from answering the "interpellation," or even that he (or she) had been converted and received Baptism before the second marriage was celebrated.

Decidedly clear and enlightening is the discussion of these difficult documents under the head of "Divorce by Papal Dispensation." The title is appropriate, because it may now be affirmed with practical certainty, notwithstanding the high authority of Benedict XIV to the contrary, that at least the second and third of these documents, as Father Joyce clearly shows, go beyond the Pauline Privilege.

An interesting question regarding the practical aspect of this Papal power, though not strictly within the scope of Father Joyce's subject, may be mentioned in connection with it.

The provisions of these constitutions originally applied to certain specified countries. The Code now enacts that the provisions relating to marriage are extending to other regions also "in the same circumstances." The practical question is: must the "same circumstances" exist in a country generally in order that these provisions may become applicable there, or is it sufficient that the "same circumstances" exist in any individual case anywhere in the world?

Dr. Donald Gregory, J.U.D., in his Doctor's Dissertation ("Pauline Privilege," Catholic University Canon Law Studies, Number 68, 1931), p. 87, holds that the conditions must exist in a region or country generally; and he admits that this interpretation renders the application of canon 1125 almost nil. Vermeersch, on the other hand, has a well-reasoned opinion to the contrary in *Periodica de Re Morali, Canonica, Liturgica,* Vol. 20, p. 1. The reasons as well as the authorities cited by Vermeersch appear conclusive that canon 1125 has practical application in individual cases where the same conditions are realized.

T. L. BOUSCAREN, S.J.

BIOGRAPHY

JOHN CALVIN: THE MAN AND HIS ETHICS. By Georgia Harkness. New York: Henry Holt Co., 1931. Pp. xiii, 266. $3.00.

CALVIN AND CALVINISM. By Benjamin Breckinridge Warfield. New York: Oxford University Press, 1931. Pp. iii, 428. $3.00.

CALVIN. By Jean Moura and Paul Louvet. 7e Édition. Paris: Editions Bernard Grasset, 1931. Pp. 350.

CALVIN: A MODERN BIOGRAPHY. By Jean Moura and Paul Louvet. Tr. by Ida Zeitlin. New York: Doubleday, Doran Co., 1932. Pp. 350. $2.50.

JOHN KNOX: Portrait of a Calvinist. By Edwin Muir. New York: Viking Press, 1929. Pp. x, 316. $3.50.

The Protestant Revolution was a movement of robust leaders. With John Calvin on the continent the primacy of the Reformation shifted from Wittenberg to Geneva and his influence radiated to Scotland, where the crusading ardor of John Knox hurried the reform to its extravagant and logical limits. As the force and symbol, the brains and inspiration of this second phase of the Reform, Calvin is delineated in three of the works listed above—a kind of trilogy on the professional reformer of Geneva; while Knox, in the other volume, is portrayed as the extreme expression of radical Calvinism. Professor Harkness unearths the almost forgotten ethical Calvin, and by her original research and trenchant criticism will appeal to the modern sociological mind in quest of the ethical concepts that have guided the commercial classes and the development of the capitalistic system. Doctor Warfield in a work, wider in scope and matter, valuates and interprets the theological and doctrinal system of Calvin. His book will mainly claim the attention of theological scholars. MM. Moura and Louvet by their quick, factual and picturesque account of the versatile reformer of Geneva, and Edwin Muir by his psychological interpretation of the representative Calvinist and Puritan, John Knox, will attract the general reader of the popular historical biography. All four works merit high praise, criticism and some opposition.

Of the four books, perhaps, Professor Harkness' volume will prove the most satisfying and constructive. To "comb" the *Calvini Opera* (59 volumes) and search and sift Calvin's sermons, commentaries and letters for ethical material is no light task. Miss Harkness has undertaken to do this. The result has been a fair presentation of Calvin's moral ideas and their application. Since Max Weber's treatise on the "Protestant Ethic and the Spirit of Capitalism" (1904-5), and Emile Doumergue's valuable work (1927), no one has mined so deeply and brought to the surface so much wealth on Calvin's ethical teachings as has Professor Harkness. Part I, in three chapters, lays

bare the story of Calvin's life. These chapters lack that completeness and high standard set by the remainder of the book, yet they give us a woman's estimate of an iron character—a new approach and a rarity in biographical writings on Calvin. In Part II, the theological basis of Calvin's ethics is stated in outline—and as far as it goes it is a reliable account. To say Calvin was "a thorough-going Fundamentalist" and to add later a "semi-Catholic" is to read history backwards. Trent did not sanction the veneration of holy images in 1563 for the first time; the Second Council of Nicea (787) gave an explicit definition of the traditional use of sacred images in the Catholic Church. On some few points of Catholic teaching and doctrine there appears a muddled presentation. With Part III, we come to the chief contribution of the book, a detailed exposition of the social teaching of Calvin, his theory of family and sex relations, middle-class Calvinistic morals, the Protestant ethic and the spirit of capitalism—this last the crown of the work. Miss Harkness concludes that "Calvinism may justly be considered a potent force in the development of the capitalistic spirit." Here her work surpasses that of Max Weber in that it is based on the "Institutes." It is an overstatement to say that John Knox derived his political ideas from John Calvin. Calvinism certainly formed his mind and character but his predecessors in Scotland and circumstances there supplied him with his political radicalism. Calvin neither encouraged nor engendered it. And Edwin Muir in several skilful chapters bears out this view in his criticism of the beliefs and principles of the stormy Scot reformer. But these are but motes of dust on a well-painted canvas. A work such as this on a specialized subject in which so little worthwhile work has been done merits a thorough reading.

To investigate and interpret the doctrine of Calvin and Calvinism was the life work of Doctor Warfield. At the time of his death in 1921, he was the leading Calvinistic theologian in the English-speaking world. He contributed many important articles to the various Bible dictionaries and encyclopedias and to the theological reviews. The essays reprinted here in permanent book-form appeared as articles in theological reviews in 1909 and 1915. His "Calvin and Calvinism" is the fifth volume in a series of ten offered by an editorial committee through the Oxford University Press. The first essay on Calvin, the man and his work, should have a definite interest for historical students. The author is intrigued by "the idealist become the practical man of affairs," and consequently overstates at times the character and greatness of Calvin. For instance, he writes that "Calvin gave to the church the entire doctrine of the work of the Holy Spirit . . . a gift, we venture to think, so great, so pregnant with benefit to the Church as fairly to give him a place by the side of Augustine and Anselm and Luther, as the Theologian of the Holy Spirit."

That Calvin was a creative theologian of the highest rank may well be

questioned. He owed much to Augustine and Scotus. His debt to Bucer was large. But as a systematizer of the Reform theology he stood with no rival in his century. Since his day there have been greater theologians. The next five chapters of the work are concerned with Calvin's doctrine of the Knowledge of God, of the Trinity and Creation and a special essay on Calvinism. Copious references are made in the footnotes to theologians, Protestant and Catholic alike. In the fourth chapter a fair and able presentation is given of the attack made against Calvin's position on the Trinity by Catholic theologians, especially by Petavius and Bellarmine, who severely censure Calvin for inaccuracy of phrase. The last chapter in the volume is a valuable description of the history of a book—the "Institutes" of Calvin—as it has fared through the centuries at the hand of printer and critic. The work is outstanding and profound, and will prove a genuine service to students of theology and to those in doubt about the mind of Calvin on the fundamental doctrines of the Christian life.

The resources which Emile Doumergue freshly placed at the disposal of the historian is ample excuse for a new short biography of Calvin. The work of MM. Moura and Louvet, based as it is on the scholarship of Doumergue, is a faithful record of Calvin's career so full of incident, of controversy and of far-reaching influence. Their treatment of Calvin's theological opinions is weak and jejune. The reader cannot help but feel that at times the writers throw about the figure of Calvin the aureole of an apology. As an index of their subjective feeling which is allowed occasional scope, we subjoin the following: *"Ce fut un homme de combat et de création, qui sut renverser et qui sut bâtir, une des plus vigoureuses intelligences qui aient été, une des plus hautes conciences, surtout un des plus grands courages qui se soient montrés dans la race humaine."* Yet there are sound and saving chapters in the book. The chapter on Michel Servet has fire and drama in it. They show that the death of Servetus was only part of a system, and the logical outcome of a theory. MM. Moura and Louvet have not given us the best short life of Calvin but they have worked through the outstanding and important biographies of the French writers and have made accessible to the general reader the facts and conclusions of Emile Doumergue, the best and most learned work on Calvin. Their volume will repay reading if only to get a modern French approach on a French Calvinist. A translation of the French work has been capably done by Ida Zeitlin, who has retained the clearness and elasticity of the language of the original.

A practical result of Calvinism has been to produce a type of man like John Knox, whose greatness lay "in the inexhaustible vehemence of his powers and the persistency of his aim." Mr. Muir is not primarily concerned with the historical figure of Knox; he chooses rather to give a critical account of the typical Calvinist and Puritan based on the evidence. Enough of the

sixteenth-century background is sketched to fill out the portraits of the tempestuous Knox. The chapters on Mary Stuart, whom Knox "pursued to disgrace and destruction," are the best in the book, and the analysis of the influence of Calvin and Calvinism is the most enlightening. The temper is realistic and bold; the estimate is that of David Hume and Burns. There is sharp disagreement with the other biographers of Knox's life since M'Crie. By applying critical tests Mr. Muir concludes that Knox was not a model "of consistency and strength"; that his conviction of prophetic powers was a delusion; that "Knox really robbed Scotland of all the benefits of the Renaissance"; and that the religion he imposed on Scotland was "a spiritual and moral tyranny." Some may see bias in the work but there is no theological bias. The book is a piece of penetrating and powerful writing bearing the same vital qualities of his other works. It will be harshly attacked from some quarters as severe and extreme but most of the conclusions of his critical analysis will remain. The work is recommended as a countervail to the lives of Calvin reviewed above.

WILLIAM J. SCHLAERTH, S.J.

INCREDIBLE CARNEGIE. The Life of Andrew Carnegie (1835-1919). By John K. Winkler. New York: The Vanguard Press, 1931. Pp. 307. $3.50.

"PAT" HURLEY. The Story of an American. By Parker La Moore. New York: Brewer, Warren and Putman, 1932. Pp. 140. $1.50.

OWEN D. YOUNG. A New Type of Industrial Leader. By Ida M. Tarbell. New York: The Macmillan Company, 1932. Pp. 353. $3.00.

For the American who judges success by the world's acclaim and the size of a bank account, these three books should help to a success formula. Here are three men who rose from factory, coal mine and farm to international headlines, and their wealth mounts into fabulous millions. Some qualities they share in common: mothers of superior ability; the help of older men as kindly patrons; a fondness for books and reading; delight in debate and public speaking. One striking note is their lack of deep religion. Carnegie had no religion to speak of; Hurley, raised a Catholic, now finds spiritual inspiration in all Protestant sects; Young holds (p. 44) "a liberal doctrine—that of the Universalists—freed from over much creed, ceremonies and fanaticism . . . it gave him few superstitions to unlearn. . . . ." (Sic!)

Hurley and Young bear closer resemblance. They are products of strictly denominational colleges, Baptist and Universalist. During their school days they were known as orators, class leaders engaged in many extra-curicular activities, were often mediators between the faculty and the student body. Both taught for a time.

If, from this, anyone can be helped to make his own success formula, there remains one word of warning. Do not be fooled into following the rules for success which Carnegie wrote. His deeds give the lie to his words.

In vivid style John Winkler has given us the story of Andrew Carnegie, along with an account of the growth of the steel industry and big business, that deserves more than passing notice. He presents the merry Scotch pirate, greediest of men, the most cruel task master, irreligious, with a deep knowledge of human nature that enabled him to pick the right men at the right time, whose helpers driven by his own almost preterhuman energy became millionaires or physical wrecks; who could put a virtuous austerity into his writings, filling pages with pietistic aphorisms, and at the same time unscrupulously crush a friend and close associate who threatened his rising dictatorship.

From his first days of petty grafting, through all his ruses to obtain control, by "tangled and devious" relations with railroads, and marked by scandals that reach even into the White House, Carnegie is laid bare as a most ruthless and conscienceless leader of big business in its boom days. In the meantime he piled up a fortune estimated between 350 to 400 millions of dollars, concerning which Andy said: (p. 8) "If a commission was sent down from Heaven to assess my right to what I have, I should be deprived of a goodly part of it."

Frick, who understood Carnegie as well as any man, remarked, after their quarrel, to one attempting a reconciliation (p. 7) "Tell your friend Carnegie that I will see him in hell where we are both going."

Having made his millions, with his pride satisfied and his sense of power fulfilled, "St. Andrew" proceeded to give away the most of his fortune in much publicized benefactions, the value of which is still unproved and debatable, as Mr. Winkler shows (p. 278).

Charity, properly motivated, covers a multitude of sins. Perhaps Henry C. Frick's condemnation was not sustained by a higher Judge. Certainly in his lifetime Andrew Carnegie was one "of those who fight most relentlessly and pay the least heed to conscience," whom Pope Pius XI severely reproves.

In a thoroughly partial and unbalanced manner Parker La Moore extols "Pat" Hurley, an American. Although it is not mentioned, Mr. La Moore first wrote this story for an Oklahoma City newspaper, under the title, "From Coal-Mine to President's Cabinet." The encomium is a collection of testimonials from old settlers, bits of biography, and quotations from Mr. Hurley's speeches including an entirely disproportionate one of eleven pages wherein Secretary Hurley defends President Hoover and the Republican Administration.

"Pat" Hurley was born of Catholic Irish immigrants. His father, Pierce O'Neil Hurley, "imbibed too freely of hard liquor" and was "a two-fisted scrapper," who could also recite pages of poetry. His mother, Mary Kelly, "a devout, superior, highly respected" woman, died when "Pat" was thirteen years of age. This son grew up from coal miner, ranch hand, lawyer, to be a "dry," a millionaire some times over, and "a Protestant by intellectual preference, [who] has visited about among the various churches of that school of thought, finding spiritual inspiration in them all." (P. 90.) We are amazed at such tolerance.

A magazine article of the past year on Mr. Hurley, entitled "Mr. Hoover's Stalking Horse," furnished an antidote for this futile campaign biography. Referring to the War Secretary's change of religious belief the article boldly states, "this early apostacy was one of the most fortunate steps in his entire political careeer, inasmuch as it removed his disqualification for the highest office within the gift of the people." Its author proves, contrary to La Moore, that Mr. Hurley employs a Jewish ghost-writer to produce his famed, brilliant sallies of Celtic wit and oratory.

Because of other conflicting stories that have appeared in newspapers, magazines and books, Mr. Hurley cannot take it amiss if his own words are applied to him. "Human greatness can only be assayed in the crucible of time." (P. 86.) During the next four years, at least while "Pat" Hurley is shut off from the limelight of political position, he has an opportunity of proving his worth as an outstanding American citizen in private life.

Ida M. Tarbell remarks in the Foreword to her book on Owen D. Young "that while I am an authorized biographer, I have not written an authorized biography." She writes the life of a man in whom she can find no blame. To defend this pean of praise she remarks: "I chose to lay upon their [friends' and associates'] enthusiasm, a little of whatever blame attaches to the fact that without intending or desiring it, I have written what approaches a eulogy." Miss Tarbell defines her secondary title (p. 213):

> A new type of industrial leader, one who has brought an acute, trained and well-stored mind to the confusing and mysterious financial and organizing processes of what is called BIG BUSINESS, one who has had a long experience in handling these processes, was unafraid to face and examine them for both their benefits and errors, nor afraid to talk over with the public what he found.

We are told of the poor farm lad from Van Hornesville, N. Y., called Owen from the hero of a novel his mother read, with D. put in just for a euphonic middle initial. The boy loves books; goes to high school and is valedictorian; moves up to St. Lawrence College; studies law at Boston University, after being refused at Harvard because he had to work for his education; lectured at his law school (1895-1903) on common-law pleadings;

entered the Tyler law office and became a member of the firm in 1907; went to the General Electric in 1913 as Vice-President in charge of policy; became more known by his work on the Dawes Plan; made Chairman of the General Electric in 1922; gained international recognition by the Young Plan for German reparations. Miss Tarbell does not mention his ten directorships in various corporations, nor that he is called one of the Twelve Apostles of Wall Street, under the Morgan dictatorship.

At the time the book was written, he was being mentioned as a Presidential candidate. The author seems anxious to campaign for him and to forestall the most Republican objections: he is in favor of both trade unions and company unions; he strongly supports the practice of holding companies.

Writing eulogies of the living is a dangerous proceeding. Mr. Young has been questioned by Mr. Lewis F. Jacobson about his relations with the Insull Utility Investments Inc. Owen Young was one of a select group of insiders to whom Mr. Insull sold stock at low rates. This has been called "a defrauding of stockholders . . . wrong even according to the then-prevailing system."[1]

The Radio Corporation of America did not go to the courts as Miss Tarbell predicts as likely (p. 220). Rather than stand a long and costly trial with the risk of losing, R. C. A. has agreed to break up its patent pool. Mr. Young, as a director, will not now have to appear as a defense witness in what threatened to be one of the biggest anti-trust suits of all time.[2]

Ida Tarbell's Mr. Young sounds too good to be true. Yet as she says, "there is no final balancing of this man. For one reason the returns are not all in." Let us hope that Miss Tarbell, who has written worthy books and is now enjoying her advancing years, will be spared to write a better biography when the returns are in, and a better balance can be taken.

WILLIAM F. RYAN, S.J.

COLLEGE HISTORY

FOUNDING OF AMERICAN COLLEGES AND UNIVERSITIES BEFORE THE CIVIL WAR. By Donald G. Tewksbury, Ph.D. New York: Columbia University, Contributions to Education, No. 543, 1932. Pp. x, 254. $2.50.

This study is a careful survey of the establishment and the development of one hundred and eighty-two permanent colleges and universities founded in the United States before the Civil War. It was made upon the basis of extensive research in original sources; it traces the growth and development

[1] *America*, October 29, 1932, page 82.
[2] *Time*, November 28, 1932, p. 43.

of the movement for higher education from the founding of Harvard in 1636 to the Civil War period. The investigation was well-organized and the study is a distinct contribution to the understanding and appreciation of the forces which moulded college and university education in this country. Many facts in such a brief dissertation must necessarily be omitted; accordingly it may seem regrettable that certain sections of material were omitted but such omission was no doubt justifiable from the viewpoint and according to the purpose of the author.

The relationships of the moving frontier and the American college are carefully presented. The dependence of Western colleges on the East, the mortality of colleges on the frontier, the location of colleges, and the expanding field of higher education are described.

The foundation of denominational colleges before the Civil War is depicted. The religious character of the American college, the denominational college and the separation of Church and State, and the effects of the Dartmouth College Case on both Church and State schools are described and interpreted. The relationship of Church organizations to the founding of colleges is shown. The conflicts not only between Church and State, but also those among the various Church groups are explained. Explicit data concerning the higher educational facilities of the Presbyterian, Methodist, Baptist, and Congregational denominations are presented. A brief statement of the founding of permanent colleges by eleven other denominations is made. The educational policies and the motivating forces affecting the growth of higher education among these groups are presented.

The struggle for and against State universities is outlined. The attempts of the conservative Church groups to resist State intrusion into the field of higher education and the efforts of "revolutionary" forces to encroach on the domain of higher education are clearly presented. The progress and development of State universities is indicated. The battle for State-supported universities against control by denominations, which was one of the hardest fought and most exciting of the conflicts of education in the United States, is described. The controversial issues of the conflict, the trend of the controversy down through the decades, and the various outcomes in different States are presented clearly and admirably. The foolish intolerance as well as the well-grounded fears of various groups in the different stages of the conflict are indicated quite clearly.

The organization of the dissertation is clear. Tables concerning the founding of colleges and universities according to chronology, denomination, State, and alphabetical index are presented; meticulous references to primary and secondary sources are made; a well-organized bibliography is provided; graphic representations of data are included. This study is an excellent beginning in this field; with it as a base, further investigation may be intelligently directed.

JAMES A. FITZGERALD.

LATIN AMERICA

AMERICAN FOREIGN POLICY IN MEXICAN RELATIONS. By James Morton Callahan. New York: The Macmillan Co., 1932. $4.00.

This book appearing six years after a similar study, "The United States and Mexico," by Prof. J. Fred Rippy adds nothing new. It covers the same ground and follows the same general plan. Both professors consider the American post in Mexico as the most difficult and important of all the diplomatic missions in the New World, and each notes the complications produced by the policy of expansion and economic penetration pursued by the United States and by what both are pleased to call the periods of disorderliness and instability of the Mexican government "common in a weak and bankrupt state." Professor Callahan rather presents himself in the light of an official defender of the Department of State, a kind of subdued *defensor civitatis* who prefers to let the facts culled from official collections of documents and newspapers speak for themselves.

He rarely condescends to a critical comment. When he does the result is not happy and arouses suspicions of his qualifications as an interpretative historian, e. g., his amateurish summary of the causes of the fall of Napoleon III include "urged along slippery paths by fame-seeking generals and ambitious Jesuits" (p. 330). In the interests of historical accuracy his references to the speeches delivered by MM. Thiers, Favre, Ronher in the session of July 9, 1867 of the *Corps Législatif* need further sources to lift the Jesuits out of their anonymity. His final chapter on the decade between 1921-31 furnishes no further additional sources which any of his literate fellow citizens could not have found for themselves in the current files of the *Nation, Current History,* New York *Times,* Baltimore *Sun,* Relations of the State Department, Senate Documents and the speeches of Calles.

Unfortunately none of these sources reveals the necessary acquaintance with Catholic terminology. "Religious strike" (p. 615) is not the technical term for the situation which began in Mexico for the Church on August 1, 1926. Mr. Callahan could have learned the identity of the Mexican Archbishop who, "influenced by good advice," agreed to negotiate. As the Archbishop is still alive, Mr. Callahan might have arranged to meet him and thus secured some more details of the "good advice." Also through him he could have met other Mexican Catholics and found out just what "considerable unofficial attention" Mr. Morrow devoted to the Church question (p. 614) about which Mr. Callahan is completely silent.

He is also strangely silent on other points extremely interesting for the elucidation of American foreign policy. Just what were the exact relations between the American Department of State and Juárez? Mr. Callahan

raises our curiosity to the fever heat in his criticism of Maximilian's government (p. 314). He considers that the Emperor lost his office and his life because of his encouragement of the immigration of Confederate officers and their slaves into Sonora and his efforts to colonize thus a hostile barrier along the Texan border. These measures of a "dangerous and desperate government" the United States could not view with approval. But to whom could it protest or apply for redress in case of future violation of American rights? Through France Lhuys replied, "Go to Juárez with your griefs." Now just what does Mr. Callahan expect us to conclude from this? And just why did the United States government consider that General Sherman, at the side of Minister Campbell, would render "the formal recognition of Juárez more impressive"? (P. 328.) Is it possible that Mr. Callahan has not read the correspondence of Juárez to his agent in Washington wherein may be found comments on the Americans quite inconsistent with those which Mr. Callahan prefers to print on p. 331?

The next great mystery in Mexican-American relations, the Wilson policy, receives no clearer treatment. The usual press account of the tortuous diplomacy of that policy and its repercussions in the policies of Harding, Coolidge and Hoover, is given and the tale is sorry enough as it stands. Perhaps the events are too recent for other sources, but even recent diplomacy may be handled expertly. And this is the major weakness of the book. Diplomacy and diplomatic policy are something more than the mere statement of what one government says to another officially and unofficially. It implies a theory and an objective and, therefore, to explain the policy and the problems it attempts to solve, as Mr. Callahan professes to do (cf. Preface), the selection of statements must be made to illustrate the theory and policy if either is to be understood. This synthesis Mr. Callahan fails to present.

It is true that in agreement with Mr. Rippy, he thinks American action followed the manifest destiny theory of the United States, at least insofar as this would provide a natural frontier. This is consistently stated by all American Ministers from Joel Poinsett to J. Reuben Clark though at some times more openly than at others. The long list of American representatives reveals varying merit. Many of them were very inferior, but all were loyal to this principle, even though some differed as to the means to attain it. Mr. Callahan rather leaves it to be inferred that behind manifest destiny lies the principle of imperialism and industrial capitalism, a point upon which Mr. Rippy is eloquent. But neither brings out, either directly or indirectly, that behind the search for the natural frontier lies a fundamental conception of the State and of the nature of government. It was on this rock that the United States and Mexico came to grief. It is the rock which wrecks all their attempted solutions of their mutual differences and mutual problems. The Foreign Departments of neither see this because the men in charge, true

to their training and age, always see the problem as psychological, and not as metaphysical.

In other words the American Department of State considers that the problem is one of personalities, jealousies, misunderstandings and, therefore, that a get-together spirit will iron out these difficulties. While these factors undoubtedly contribute to confusing the efforts at solution and, therefore, should be eliminated, this alone is not sufficient.

The problem is metaphysical, which is to say: The problem is a technical one of government. What is government (or State, as some political theorists prefer)? Is it an authority? Or a jurisdiction? Or is it a mere group, among other groups, acting through a bureaucracy which at its best may be incorruptible and stern, at its worst the prey of grafters, their friends and hangers-on?

If it is an authority, it must justify itself by something more substantial than the abstraction, "the will of the people," or a subjective view of justice. For the question is then raised: *whose* justice? And a deadlock results unless the justice transcends the individual into an objective and due order wherein the actions and the statements of those in charge of the government bear relation to this due order. This point, as the record delineated by both Mr. Rippy and Mr. Callahan shows, both countries deny. Each acts on expediency or opportunism as conceit, fear of English or European aggression, or greed for profits or commercial monoplies are uppermost in the minds of the Americans, and as fear of American absorption, dislike of modern industrialism, consciousness of their own feebleness and lack of constructive ideas are uppermost in the minds of the Mexicans. This is severe language but imperative in the face of the facts.

The whole diplomatic situation between the United States and Mexico is a very good illustration of the modern tendency, perhaps human more than modern, of using words which have a high moral connotation to describe mean and inferior motives so that one loses sight first of the motives, then of the facts, and finally arrives at pure abstractions where all is sweetness and light for one's own side.

If on the other hand, government is not an authority, but a jurisdiction, over what does it preside? Individuals? The relations binding individuals into cooperative action? Or territory? No American or Mexican of the nineteenth or twentieth centuries in charge of the Foreign Relations could or did accept the first. Certainly it could not preside over individuals since government, as the expression of the will of the people as shown in public opinion, follows and does not lead. Over relations then? How could either people admit this without some norm of action, beyond the individual, to harmonize the relationships? They did attempt it, relying on self-interest

and good-will, and over and over again these went to pieces in their hands. So nothing practical is left to try save territory.

And this it is which is behind the American demand for a "natural frontier." A natural frontier is one which so circumscribes a people that without fear of outside attack, it may impose its will within that boundary. Modern peoples are coming to consider it impossible for government to administer without such a boundary so that State (government) and territory are identified in the popular mind. This is the prime error of modern political action. While it is a truism that men must have territory on which to set their feet, territory in itself conveys no right, adds no jurisdiction, gives no prestige to government. Until this is recognized by statesmen, diplomacy is a farce, and diplomatic policy a delusion and a snare. There is no solution but the might of the sword.

MARIE R. MADDEN, PH.D.

MEXICO BEFORE CORTES. By J. Eric Thompson. New York: Charles Scribner's Sons, 1933. Pp. 298. $2.50.

PEDRO DE ALVARADO CONQUISTADOR. By John Eoghan Kelly. Princeton: Princeton University Press, 1932. Pp. 278. $3.50.

HISTORICAL EVOLUTION OF HISPANIC AMERICA. By J. Fred Rippy. New York: F. S. Crofts and Co., 1932. Pp. 580. $5.00.

HISTORY OF THE LATIN-AMERICAN NATIONS. By William Spence Robertson. Second edition, revised and enlarged. New York: D. Appleton and Co., 1932. Pp. 821. $5.00.

The reviewer has a pleasant task in discussing this quartet of volumes on Hispanic America. With the cue taken from the third in the series, the four fall into a convenient story of the evolution of the present peoples who inhabit the vast expanses of Central and South America. First comes the careful sketch of the pre-Columbian empire that dominated so much of modern Mexico. The biography of a great conquistador tells the story of Spanish occupation. The study of Doctor Rippy weaves the first and second epochs into an analysis of the entire development of the subject. Then in the fourth volume, the master scholar furnishes a fine text for the course in the republics that constitute, with our United States and Canada, the body of all America.

Here one might take a leaf from the address of the retiring president of the American Historical Association, delivered by Doctor Bolton at Toronto a year ago, and point out the essence of what he fitly styles the "Epic of Greater America." To many Americans it comes as a distinct surprise to hear that the United States occupies barely one-fourth of the continents that comprise geographical America. More strange is the idea that ours is the

land of the late-comer, that our Nordic ancestors found the leftover portions of this territory after the Hispanic peoples had taken their choice and enjoyed possession for over a hundred years. Of our own nation, fully two-thirds once obeyed the rule of the viceroy in Mexico City. Both before and after our revolution, the upper boundary of New Spain extended from Puget Sound eastward in an oblique line across the Mississippi above Saint Louis and on down to the southern border of Georgia. Even Virginia and the Carolinas lay in the orbit of Madrid till well on into the seventeenth century.

Time came when the Anglo-Saxon tide began to roll westward, steadily, eagerly, till it embraced and peopled with its own the northern half of that immense viceroyalty. The Rio Grande now divides the nations, yet if it forms a line of separation, it likewise beckons us to look across its waters, for there lie certain portents of the future as well as important features of the past. Scholars and statesmen today visualize the bearing of this fact, even as economic adventurers find a gleaming harvest field in those lands that are eager for our friendship. Not that they stoop to beg our pittance; that is not the way with the sons of the dons. They will, however, be our brothers, if we but approach them in understanding cordiality. And the first step in this meeting is to know their soul, their traditions, their aims and their achievement.

Cortes and the Spaniards first occupied the Aztec realm, because of all America it was most worth the trouble. The picture of this civilization is a novelty to many contemporaries, who gasp in wonder when told that on our own shores, long before the tread of European armies, ancient cultures stood in isolated grandeur paralleling the Oriental developments. Four of the early peoples of this hemisphere present striking characters: the Quichuas, Chibchas, Mayas, and Aztecs.

Thompson has taken the last for his subject. He might have followed the glamorous pages of Prescott, and pointed out the notable scientific, artistic, military, political skill of the Nahua race. Instead, he has written a sober account of their institutions with a view to exact information rather than poetic glorification. The reader will fashion his own generalizations, on the all-embracing note of native religion, on comparative opinions of altruism or cruelty, on the cultural heritage left to their descendants by the imperial subjects of Moctezuma.

The volume is obviously intended for popular reading, and thus has none of the scholarly apparatus of the monograph. In fact, the author disclaims originality, though the reader is forced to see the continual fortifying of statements by conclusions drawn from the personal archeological knowledge of the Field Museum specialist. And as this institution has taken a leading part in reconstructing the pre-history of Central America, the work thus takes

on a high degree of authority. Certainly for students it will be a most useful handbook, a guide through documents and the remains of buildings and implements that are coming to light so frequently in these days. The material on the calpulli colleges will add much to the current information on education among those supposedly savage tribes. The numerical estimates—a population near to fifteen million at the time of the Conquest—agrees with the best modern calculation. Aside from a few faulty cross references, and the usual first chapter full of hypotheses about our shadowy ancestors and their neanderthalic customs, the book is worth careful reading, for it gathers the best that has been said about that attractive period in western-hemisphere history.

The story of Pedro de Alvarado is classic. The strong right arm of Cortes in that heroic warfare against odds so overwhelming as to be incredible, this fair-haired son of Estremadura won his reward in the privilege of conquering the southern provinces down to Nicaragua. Now installed as Captain-General and Governor of Guatemala, the most daring knight of all that epoch swung down into the lands bordering Pizarro's Peruvian empire, only to return inglorious, without combat, without army, without conquest save the gold with which he was bought off. Not yet daunted he formed a new fleet to gain the Spice Islands, but the viceroy Mendoza turned him into a new deal for subduing and dividing newly discovered Cibola and Quivera. Before the venture materialized, Alvarado was summoned to take part in putting down the formidable Mixtec Rebellion. Unhorsed in the thick of the battle he was ridden down by a crazed compatriot and died a sad death for a conquistador, out of the stirrup, out of the fight.

The author of this tragedy has made a useful contribution to scholarship. His summary treatment of Cortes and the Conquest is a pleasing outline of the famous work of Prescott. Much new material is made available from Guatemalan sources, and the student will especially welcome the reprinting of the documents bearing the immediate imprint of the dashing Alvarado. There is some confusion due to haste or printing errors, such as inversion of singular and plural pronouns, misplaced commas, and frequent absence of footnotes that would clarify statements on controverted points or newly expressed views. The shafts directed at Las Casas and Bancroft detract from the general calm of this usually careful writer.

The pair of volumes on the broad story of Hispanic America have very much to recommend them, and yet they tell the same story in widely divergent style and method. Robertson has no peer in factual content, and his revised edition improves his highly teachable former text. His insistence on Brazil is a saving offset to the too common neglect of Portuguese importance in South America. He offers chapters on each single State, always seeking the

significant fact for full and clear treatment of the individual nations. One would wish that he took the pains to study ecclesiastical history from less partisan sources. In particular he might prudently temper his account after a reading of Duhr's *"Jesuitenfabeln,"* wherein a historian of first rank investigates many points that would give fresher and more correct interpretation to the all-important question of Religious Orders.

Doctor Rippy has given us a notable book, and the public is ready to see in him a landmark for the future. Not properly a text, his volume offers a synthesis of the entire subject. Modeled on something like the excellent pocket edition of Shepherd, based on deep knowledge and generous interpretation of Hispanic civilization, he has done honor to his illustrious preceptor whose presidential address was mentioned above. All the forces of historical development as at present recognized have been molded into a piece of creative writing. Never does he lose sight of the essential European background that accompanies his action at every turn. The views of native writers, who naturally should know their locale better than we of distant lands, continually brighten his pages and carry on his story. And the international section demands universal attention.

It may well be that in his later narrative he sees the burning question of Church and State with something of the view of an outsider, though he certainly approaches the heart of the difficulty in his illuminating discussions. The present reviewer prefers to stress the appreciation of Doctor Rippy for the religious impulses that went to the building of those nations. The following citation will furnish ground for that judgment, and will form a convenient close to these paragraphs. Of the colonial period he writes:

> Such was the work of the far-flung line of the Conquistadores of the Cross. Almost everywhere they confronted appalling obstacles—depressing heat, drought, famine, flood, insect and reptile pests, treacherous, ignorant, or hostile Indians, roving encomenderos looking for natives to exploit, Portuguese raiders in search of slaves. The mission frontier advanced, receded, advanced, and sometimes receded again. The number of the reductions which the missionaries established and of neophytes which they won probably no one save the recording angel will ever know; but by dint of almost superhuman patience and energy, and by a zeal which ran to meet martyrdom, they made a good beginning. For America they ushered in the great missionary age.
>
> From the viewpoint of the Spanish monarchy, however, their work, when completed, was but half the process. They might, and did—for this was their duty—partially Christianize the natives, teaching them to say prayers, repeat psalms, produce sacred music on instruments of their own make, march in religious processions, enact religious dramas, keep faith with one wife, and observe the Ten Commandments. They might, and did—this was their persistent policy—partially civilize the Indians as well, instructing them in rudimentary letters, industry, art—particularly sacred art—agriculture, stock raising, and the application of simple medicinal reme-

dies. But this, after all, was only in preparation for the advancing civilian phalanx. The royal plan embraced the absorption of the natives into the body politic and the creation of a new race. In this respect Spain was the most original of all colonizing powers.

W. EUGENE SHIELS, S.J.

SCIENCE

MAJOR MYSTERIES OF SCIENCE. By H. Gordon Garbedian. New York: Covici, Friede, 1933. Pp. 355. $3.75.

THE STORY OF A BILLION YEARS. By William O. Hotchkiss. New York: The Century Co., 1932. Pp. 137. $1.00.

SCIENCE IN THE CHANGING WORLD. By Julian Huxley and Others. New York: The Century Co., 1933. Pp. 286. $2.00.

It is a noticeable fact that the present generation is becoming more and more science-minded. A brief study of the general trend of the exhibits at the Century of Progress Exposition in Chicago will suffice to convince one of this, for the majority of these tend to emphasize the progress that has been made along scientific lines during the last one hundred years. For this reason the three books named above can be recommended as giving a good cross-section of the present status of scientific knowledge, containing as they do the current opinions regarding the origin and development of the earth and its inhabitants, and outlining briefly the unsolved questions that confront the scientists in every sphere of activity.

Mr. Garbedian, in his "Major Mysteries of Science," has presented us with a work most interesting and instructive, and one that is unique in its field. Man has always been interested in the origin of life, the secrets of the earth and the skies, and especially in these days, in the problems of this so-called Machine Age. The "Major Mysteries of Science" gives us, for perhaps the first time, a compendium of all these problems together with their probable answers, insofar as such answers are at all possible. In many cases, as the name of the book indicates, the fact in question is a real mystery which is left to the investigations of future scientists, and the author is frank enough in admitting as much.

The problems of electricity, chemistry, and the conversion of energy into power by various machines have long gone unexplained to those who have not been inside a classroom for the past fifteen or twenty years. Now we have in a very readable form the answers to a great many of these questions. We read of the electro-magnetic discoveries of Faraday which were the basis of all our present electrical developments. We are told of the progress made in all phases of electricity down to the wonders of the radio and the photo-

electric cell. We see the part chemistry has played in the development of our social and economic life. Who, for example, would have imagined that sugar could be obtained from cottonseed hulls, or that automobile paint could be manufactured from gunpowder? We have synthetic rubber, synthetic silk, synthetic alcohol, synthetic dyes; there is now an equivalent synthetic substance for scores of natural substances, and chemists seem but to be beginning the process of giving us new synthetic articles of everyday use.

Turning to another field of science, the author takes up the problem of man's origin. Here, of course, Evolution is accepted as an established fact, and the opinions of various scientists as to the manner in which the different kinds of life developed are briefly set forth. Then there is the very interesting question of the immortality of material life. Certainly experience teaches us that, so far as we know now, death comes eventually to every living material thing, but modern biologists are endeavoring to show that the human cells are potentially immortal, and that by themselves they might go on living forever. Dr. Alexis Carrel of the Rockefeller Institute is quoted as saying (p. 76):

> The human body is composed of cells that are potentially immortal, but is itself subject to senility and death. Death is apparently the price we pay for brains, for the flesh seems to be immortal, but brains are lethal and doomed to kill their possessor in the end. Death as a price is not excessive, because the mysterious energy which is created by the brain cells or expresses itself through them is, after all, the greatest marvel of this universe.

Apparently Dr. Carrel has little faith in the idea of an immortal soul.

The average man today has but vague ideas as to how our earth was formed. Of course no one has any definite knowledge on this subject, but there are several theories which have been proposed, discussed, accepted by some and rejected by others. LaPlace, Chamberlin, and Shapley, among numerous others, have given us theories which are still currently discussed. The LaPlace theory, however, has gradually been discarded, and Chamberlin's planetesimal hypothesis, modified by Jeffreys and Jeans into the tidal evolution theory, is generally accepted today as the best explanation yet evolved of the origin of the earth, the moon, and the other planets and satellites.

We see occasional mention made of the quantum theory, cosmic rays, the expanding universe, the ultimate constituents of the atom, and similar topics. Mr. Garbedian gives a brief but illuminating discussion of these various subjects in chapters that are well written and quite instructive. Taking the book as a whole, it would appear that the author has attained the end he had in view in a very convincing fashion. For while in many cases there is no evident solution of the problem under discussion—and this the author does not hesitate to admit—still, after a careful perusal of the book one feels that one knows considerably more about the modern scientific questions than one did previously.

"The Story of a Billion Years" is one of the numerous volumes of the Century of Progress Series, which series has for its objective much the same idea that Mr. Garbedian had in his "Major Mysteries of Science." The main difference is that the former goes more into detail in each topic to which it devotes a separate volume, while the latter includes the brief discussion of each subject in one volume. "The Story of a Billion Years," as is indicated by the name, is a short but well put together summary of the nature and scope of geology. It narrates in a very clear way the current and generally accepted idea of the evolution of our earth and the various kinds of life. There is a brief description of the economic value of geology which is very interesting for one who has never thought much about or inquired into the subject.

In "Science in the Changing World" we have a collection of scientific talks which were broadcast over the radio in England during 1932 by a group of very eminent scientists and scholars, such as Belloc, Baker, Haldane, Aldous and Julian Huxley, Levy, Lodge, Russell, Fausset and Holland. The talks cover the questions of What is Science?, Science and the Development of Man, and Science and the Development of Civilization. As might be expected, the viewpoint taken by nearly all of these men is strictly evolutionistic, and the style of the addresses is popular. Evolution is taken for granted, and modern science is credited with casting off the so-called shackles of religious prejudice and assuring for the present and future generations the unobscured truths regarding the development of animal and human life. Here and there veiled aspersions are cast at the Church for having impeded the progress of science during the Middle Ages, but as these are merely the personal opinions of individuals, no great weight need be attached to them.

All of these books give us a good idea of the trend of modern scientific thought, which tends more and more towards the acceptance of the theory of Evolution, in spite of the fact that there is such a diversity of opinion among leading scientists as to the truth of, or the interpretation of, the facts that are adduced as proof of this theory. This is all the more strange when we consider that nearly all scientists are very wary about committing themselves when there is question of accepting a new theory in explanation of some known fact. Yet when it comes to accepting the theory of the evolution of man, there are still very many who refuse to accept any other explanation, although the proofs given for man's evolution are still very far from being conclusive. However, if one keeps this point of view in mind, one can obtain much genuine scientific information from a careful reading of these volumes, and will lay them down with a much deeper insight into the mysteries of God's Creation.

JOHN M. LIPMAN, S.J., M.A.

RECENT ADVANCES IN CYTOLOGY. By C. D. Darlington. London: J. & A. Churchill. Pp. 559. 18/.

CHROMOSOMES AND PLANT BREEDING. By C. D. Darlington. New York: The Macmillan Company. Pp. 112. $1.75.

THE MECHANISM OF CREATIVE EVOLUTION. By C. C. Hurst. New York: The Macmillan Company. Pp. 365. $6.00.

THE ACTION OF THE LIVING CELL. By F. B. Turck. New York: The Macmillan Company. Pp. 308. $3.50.

Biological science is undergoing rapid progress in many different directions. A vast army of research workers are daily turning out volumes of new experimental findings that cry aloud for coordination and synthesis into a unified scheme. A significant fact is that much of this investigation still centers around the cell despite the now prevalent view that it is in the organism-as-a-whole that the secret of life is hidden. This approach to the whole through its parts has been recently defended by Sir Frederick Gowland Hopkins in his presidential address before the British Association on September 6, 1933. Speaking of his specialty, biochemistry, Sir Frederick says: ". . . it is still entitled to claim that its studies of parts are consistently developing its grasp of the wholes it desires to describe." General Smuts, the apostle of Holism, also admits that for experimental biology it is logical and necessary to approach the whole through its parts.

In biological theory the "part" is still in most instances the cell and its constituents, especially the chromosomes. The discovery that the hereditary particles, or genes, are contained in the chromosomes has given a tremendous impetus to the study of chromosome cytology. Most of the investigation has been carried on by the cytological method and in correlation with the findings of genetics. Dr. C. D. Darlington, cytologist of the John Innes Horticultural Institution, is one of the most active members of this cytological revival. His "Recent Advances in Cytology" is a work of lasting merit and deserves to be placed next to Wilson's "The Cell" on the biologist's bookshelf. It is a summation of the large cytological literature of the past decade, unified by the authors own theories of chromosome behavior.

We may divide the recent progress in chromosome cytology into two parts: those investigations delving into the finer structure and action of the individual chromosomes, and those concerned with sets of chromosomes, their variation in number and their relation to species and races.

An ever-increasing number of observations on favorable material show that some of our old ideas of mitosis were inaccurate. It was formerly thought that the chromosomes first appeared at prophase united end to end in the

form of a continuous spireme. It has now been shown in all clear cases that in the spireme stage there is a distinct thread for each chromosome. The change from prophase to metaphase chromosomes has usually been described as a contraction of the long thin thread to a shorter and thicker rod-like chromosome of specific size and shape. While still substantially true, several refinements have been added to the description of this process as follows. At the beginning of prophase the invisible chromosomes of the resting nucleus give off water and thus are condensed in diameter and become visible as long thin threads. As prophase continues they assume a spiral form which becomes more closely wound until at metaphase the spiral is wound tight and presents the short thick form characteristic of metaphase chromosomes. During the past ten years this spiral structure has been found by a score of investigators in about fifteen different species of organism. A very special technique is required to bring out this structure which is not revealed by the classical methods of chromosome investigation; hence the small number of cases in which it has been thus far observed.

Another very important change in our knowledge of cell division regards the time of chromosome division. It was formerly thought that chromosomes were single structures up to metaphase, at which stage they divided immediately prior to their separation and distribution to the daughter nuclei. In recent years, more refined methods have shown the chromosomes as double threads from the time of their first appearance at earliest prophase of mitosis. A few workers have even contended that the chromosomes during the telophase of one division are already splitting for the next division. This contention is not well supported by observation and there are also several theoretical difficulties to its acceptance. The chromosome thread then is single at telophase and double at the next prophase. The conclusion is that the division has taken place during the resting stage of the nucleus. This opinion is not only supported by observation but seems logically correct for the following reason. Cell division as now understood consists of two different processes: first a stage in which each gene in the chromosome reproduces itself, secondly a process by which the two identical sets of genes are separated and passed to daughter cells. This second process corresponds to what is ordinarily called mitotic division. It is a dynamic process which once begun is quickly brought to completion. There is no lull in the rapid succession of events during which the genes could have time to reproduce themselves; hence the logic of the view that the doubling of the genes takes place in the resting nucleus. If chromosomes are strings of genes in linear array, the self-reproduction of each gene is equivalent to the longitudinal splitting of the chromosomes; and if this doubling process takes place during the resting stage we can understand how a chromosome enters the resting nucleus as a

single thread and comes out a double thread at the prophase of the next division.

It is a commonplace of cytology that chromosomes at certain times associate in pairs. With this well-known property of chromosomes as a basis Darlington lays the first fundamental hypothesis of his theory. It is that like chromosomes or parts of chromosomes are attracted in pairs; furthermore the attractive force is satisfied by the coming together of two chromosomes, so that more than two are not attracted. This hypothesis together with recent observations leads to a new and original proximate explanation of the difference between mitosis and meiosis. As already mentioned, in ordinary mitosis when the chromosomes first appear at earliest prophase they are already split into two daughter chromatids, presumably by the doubling of each gene during the resting stage. These two chromatids or halves of newly divided chromosomes lie side-by-side and thus the attractive force is satisfied. This is not the case in meiosis. At the prophase of the first maturation division the chromosomes always make their first appearance as single undivided threads. For some unknown reason the division of each chromosome into two chromatids, or in other words the self-reproduction of each gene, is delayed at the beginning of maturation. As a result, to satisfy the attractive force whole undivided chromosomes come together in pairs, as has long been observed in the prophase of the reduction division.

However, by the time that prophase is completed and the chromosomes have attained their characteristic metaphase size, shape and position, the delayed division has also reached a belated completion and we find, on the equatorial plate of the first reduction division, groups of four chromatids—the tetrad formations that have long been observed but never completely understood. During anaphase the tetrad is pulled apart and two chromatids go to each end of the spindle. In other words, at the end of the first reduction division we have the chromosomes already split into two chromatids for the next division. A double set of genes is already present, there is no need of a resting stage for the reproduction of genes, and so we have an explanation of the well-known fact that the second maturation division follows the first in rapid succession without the intervention of a resting stage or the formation of a resting nucleus. Thus we see that the three main pecularities distinguishing meiosis from ordinary mitotic cell division are explained by the assumption, backed by observation, that the division of the chromosomes is delayed at the prophase of the reduction division. Of course, this explanation is only proximate. We can still ask the ultimate question: "Why is the division of the chromosomes delayed at this crucial point in the life of organisms?" And this question can as yet be answered only in the language of teleology. Lack of space prevents the mention of

many other penetrating and stimulating theories of Darlington such as his explanation of chiasmata and metaphase pairing.

Another phase of the cytological revival, one which promises much light on the species problem, is the comparative study of whole sets of chromosomes in many species of the same genus. One of the outstanding workers in this field is C. C. Hurst of Cambridge. From extensive genetical and cytological studies he has arrived at what he calls the "Genetical Species" in contradistinction to the old "Linnean Species."

The criterion of the genetical species is a specific complex (genome) of chromosomes and genes. Hurst's definition of species is as follows: "A species is a group of individuals of common descent, with certain constant characters in common, which are represented in the nucleus of each cell by constant and characteristic sets of chromosomes carrying homozygous specific genes, causing as a rule intra-fertility and inter-sterility."

The idea of a genetical species based on the chromosome complex and the gene content is a very good one. The difficulty, however, of placing definite limits to the genetical species is very great. Let us illustrate by an example. As soon as cytogenetical experiments demonstrated that new constant and true breeding forms of plant and animal life arise through gene-mutation, chromosome-transmutation and by the accidental addition of chromosomes or doubling of the whole chromosome complex, extensive studies were begun on certain genera containing large numbers of species. One of the most thorough of these investigations was carried on by seven workers in Europe and America on the polymorphic genus *Rosa.* More than one thousand species and varieties of roses have been studied cytologically, taxonomically and genetically. The chromosome numbers in the majority of cases were all found to be multiples of seven, different species having 14, 28, 35, 42 and 56 chromosomes. Hurst has reduced all these thousand odd roses to five diploid genetical species, each having the chromosome number 14.

If all large genera of plants and animals consisted of polyploid species like *Rosa,* with chromosome numbers that were all multiples of a basis number, the problem of reducing Linnean species to genetical species would be relatively simple, but such is not the case. Two more examples will make this point clear.

McClung and his colleagues have examined over one hundred genera, including eight hundred species, of shorthorned grasshoppers. This large number of genera and species were found to have the same chromosome number, 24, throughout. The difference between species and genera in this case consists in the size and shape of the sets of chromosomes which differ markedly for each genus. One final example will be the case of the sedges. Heilborn examined 44 species of a single genus of sedge. Out of the 44 species, 22 had

different chromosome numbers ranging from 9 to 56 pairs. No doubt large numbers of so-called species of grasshopper and sedge can be reduced to a much smaller number of genetical species as is the case in *Rosa,* but due to the fact that the chromosomes have different methods of action in different groups of plants and animals, the task of defining genetical species in terms of the chromosomes and genes is one that will have to be worked out with much labor.

Did Hurst but confine himself to the exposition of this tremendously interesting phase of modern biology we would have nothing but praise for the work under consideration. Unfortunately in the last few chapters he indulges in a series of speculations that are neither scholarly nor scientific, and range from a mythical protogene, which explains the origin of life, to a fanciful description of the superman of the future.

A new and different aspect of cell activity has been propounded by Fenton B. Turck, who claims that under the influence of environmental factors cells liberate a product, called by him 'cytost', which controls many of their actions. For example, he cites many experiments to demonstrate that injured tissues, incident to their autolysis, liberate an endocellular toxin (cytost) which is the primary cause of shock. "The Action of the Living Cell" indicates points of contact between experimental biology and medicine. The agricultural relations of the new cytology and its relations to plant betterment are simply and well put forward in the smaller of the two Darlington works.

CHARLES A. BERGER, S.J., M.A.

PHILOSOPHY

EXAMINATION OF MCTAGGART'S PHILOSOPHY. By C. D. Broad. New York: The Macmillan Company, 1933. Pp. lv, 460. $5.25.

This book is the fruit of an excellent bit of scholarly criticism. At Cambridge University Professor Broad lectures to candidates taking the Moral Sciences Tripos, part of which is a cycle of detailed study of eminent modern philosophers selected by the Faculty Board. "It is usual for the same selection to be made for two successive years, and for the cycle to complete itself in a period of ten years with the unhasting and unresting regularity of an astronomical process" (p. xlix). However, at his request the Faculty Board interpolated the philosophy of J. Ellis McTaggart for the years 1931-2 and 1932-3, though it was not on the regular list of Special Subjects. The present volume comprises the matter taken in the former year and is a criticism of Volume I of McTaggart's "Nature of Existence"; another volume is pro-

jected, and it will embrace the lecture-matter of 1932-3, which was an examination of Volume II of the same book.

In striking and agreeable contrast with much of the modern ponderous dull lucubration on philosophy, Professor Broad's work is brightened with occasional flashes of a winning personality that make the reader long for an opportunity of hearing him lecture. Thus we read (p. 39): "Our admiration for the rigour with which Hume drew absurd consequences from his absurd premises should not blind us to the obtuseness which still failed to see the absurdity of the premises even when confronted with that of the consequences."

Again, having shown the absurdity of Bradley's "proof" that there can be no such things as relations, because they would involve an infinite series of the same, he says (p. 85): "Charity bids us avert our eyes from the pitiable spectacle of a great philosopher using an argument which would disgrace a child or a savage."

In a thoroughly British mood he radiates the following little quip (p. 99): "As soon as this elementary confusion [of a quality and the nature of a quality] is cleared up, Bradley's argument collapses like a dollar security."

Now, was that a nice thing to say? It may not have been an anachronism when it was written; but in the light of recent events in the foreign money markets it has decided point.

Let the prospective reader, however, beware of anticipating a nursery book of fairy tales. Professor Broad conducts his readers down to the depths of metaphysics, and while they are gasping for breath he says: it will be necessary to analyze these principles further. Yet he does it gently and considerately, making his language nearly always intelligible. This is no easy task in examining a system of absolutist philosophy such as McTaggart's. For I can hardly agree with the writer in his praise of the lucidity of McTaggart's style, which he contrasts with "the writings of too many eminent Absolutists [which] seem to start from no discoverable premises; to proceed by means of puns, metaphors, and ambiguities; and to resemble in their literary style glue thickened with sawdust" (p. lii).

One suspects McTaggart's language is clear to the writer because he knows just what the former intends to say, and thus finds it said somewhere in the maze of language; but he is honest enough to confess at times that he is not quite certain what meaning his author tries to convey. Simplification that it is, this "Examination of McTaggart's Philosophy"—as well as the "Nature of Existence" itself—is a long, long way distant from the denunciation of metaphysics that seemed destined to come into vogue in the early part of the century.

A feature that commends the book at first sight and grows in the reader's

esteem as he works through the book, is the "Analytic Table of Contents" which occupies 42 pages, and re-orients him if the declination of his mental compass threatens to lead him astray.

Without claiming to be an authority in the matter, I believe it is safe to say that anybody who desires a thorough understanding of McTaggart's Philosophy, ought to read and study this work of Professor Broad. But the question arises: Does anybody consider it worth while to understand McTaggart thoroughly? And a more formidable doubt presents itself: Who would consider it worth while to write 460 pages about his philosophy, and even promise an additional volume? The answers to these questions depend on individual tastes, which are varied and sometimes surprising. Broad defends and explains his attitude in the Preface (p. 1.): "Even if I admitted that all systems of speculative philosophy are necessarily futile, I would remark that much greater philosophers than I have devoted their time to much greater nonsense than this."

It must be said in explanation, however, that not all of the book is devoted to explaining, quoting, criticizing, defending, and refuting McTaggart. There are long independent discussions by Professor Broad himself (p. lv): "As all such parts of the book are carefully marked with asterisks, [he modestly explains], no one who does not want to do so need trouble to read them."

But they are precisely the parts most deserving of reading. For in them one finds some very keen analysis of the nature of relations and qualities and other problems in ontology that have not yet been explained with complete satisfaction. And while it is difficult to see how some of this profound metaphysics could be taught in lectures to undergraduates, or even to the average group of graduate students as we know them, still it would be of great advantage for every professor of ontology to have increased the depth and breadth of his background by acquainting himself with this philosophizing on relations and qualities. But one has need to be wary: for in Broad, as well as in McTaggart, there is sometimes what appears to me a disconcerting fusion of the actual and the logical orders. This is reminiscent of the Hegelian dictum in *Logik*: "Logic coincides with metaphysics, the science of things set and held in thoughts." In other words, the reader is made to wonder at times whether all the things said really have any meaning as applied to the visible or invisible universe, or whether, on the other hand, they are only *entia rationis ratiocinantis sine fundamento in re.*

A very enlightening part of the book is Professor Broad's own contribution to the discussion of the origin, nature, validity of some fictitious ideas (e.g., dragonhood, mermaidhood), of the notion of ideal limits (e.g., perfect straightness), of some of our fundamental notions concerning morality.

I should not give the same praise to the discussion on the existence of the possibles. One is disappointed by the conviction that this is much ado about not-so-much; you feel as if you were blindfolded, rotated, inverted, shaken, twisted, subjected to the influence of thunder, lightning, and especially wind—only to find yourself, when the blindfold is removed, peacefully sitting at your desk where you began. Here (as in some other parts of the book) it is a fact that whatever of worth is said, has been said years ago in any good scholastic handbook of ontology or logic; but Professor Broad says it in a much more expansive way.

On pages 144 to 146 we find a sort of apologia for what is taken as the scholastic position on the immortality of the soul. Professor Broad admits that the concept of the soul's cessation from existence is just as unintelligible as the concept of the soul's creation. He suggests that we take the two following propositions: "The soul comes to be at the time when the body is conceived," and "The soul ceases to be at the time when the body dies." He writes (p. 146):

> The Scholastics would say that God has told us, or that we can infer from other things which God has told us, that there is a fact which concords with the first unintelligible statement, and that there is a fact which discords with the second unintelligible statement. This is, so far as I can see, a perfectly consistent position, whether it be in fact true or not.

Now, while this may be a benevolent defense of scholastic consistency, I do not think there are many scholastic philosophers who would subscribe to the statement that Professor Broad has grasped the force of their arguments.

The analysis of the concept "causation" is undertaken in Chapter XIII, and fills about 35 pages. It is a good attempt to be fundamental and thorough, and such thoroughness deserves to be more successful than it turns out to be. But in reading it I was struck by the emphasis on sequence and "conveyance," with the total exclusion of any mention of "influence" on the effect, which characterizes the cause. One is left to wonder whether the writer would not succeed better if he had taken up the latter notion and dissected it. In the course of the discussion he uses the example of determinism and indeterminism of the will; but whatever indeterminism means to him, it is not the same as what the scholastics understand by freedom of the will. The author, however, is not guilty of self-deception about his success: after criticizing and rejecting most of McTaggart's views on causality, he says (page 228): "Nevertheless, after criticizing McTaggart's views, I think it would be cowardly not to expose my own reflexions on the subject, for what they are worth, to the criticism of others." And after giving his own reflexions he says (p. 245):

I may as well confess frankly, in conclusion, that I think it very likely that this is all wrong; that it can be shown to be so; and that I shall change my mind on the subject many times if I live to the allotted span. But it represents what seems to me at the moment to be the most plausible view, and, as such, the reader must take it or leave it.

And much the same can be said of the book as a whole. McTaggart himself claimed that "Ontologically I am an Idealist," and "On the other hand, I should say that epistemologically I was a Realist." Depending on whether one is interested or not in this kind of philosophy with its Intrinsic Determination, Extrinsic Determination, Dissimilarity of the Diverse, Groups, Endless Divisibility of Particulars, Principle of Determining Correspondence, etc.—depending on one's interest in these, one can take the book or leave it. If he takes it, he will find it a thoroughly impartial and scholarly criticism, largely successful in making intelligible, things which verge on the unintelligible.

STEPHEN J. RUEVE, S.J., PH.D.

LITERATURE

WHISTLES OF SILVER AND OTHER STORIES. By Helen Parry Eden. Milwaukee: The Bruce Publishing Company. $2.00.

Mrs. Helen Parry Eden started out to be a painter, but early exchanged the brush for the pen. She has not been the first English author to do this. Her example and the example of others—notably Hazlitt and D. G. Rossetti—seem to indicate that a noviceship in the art of painting is not a bad preparation for a career in the art of writing, whether in poetry or prose.

One of the characteristics of a painter-writer is his careful way of attending to each step on his progress to the final effect. In some poems, essays and tales, the interest is largely in suspense: we wait for the last page to determine whether we shall applaud. In others, every paragraph and almost every sentence, has an interest of its own. A double attention is won from the reader who passes through a series of completed satisfactions, the while maintaining a pleasant anticipation of the enjoyment which shall crown the whole. The felicity of each touch inspires confidence in the author's ability to arrive at his ultimate goal. In this latter kind of composition, the writer who has had experience with the brush seems to enjoy a special facility. He has a happy instinct in the invention and treatment of details, not obviously related to the matter in hand, but subtly significant either as symbols or as elements in the creation of distinctive color and atmosphere. It

is this instinct which plays so large a part in producing the imaginative quality in all admirable art.

Mrs. Eden's latest book is an excellent example of creative writing in which a part is as great as the whole, in the sense that each portion has its own finished effect while contributing to the general impression. The book contains fifteen short stories, all lyricized, with three exceptions, in a prefatory poem. In one of the stories, the prose and poetry are intermingled, a bold experiment and carried out successfully. As a matter of fact, the tale which Mrs. Eden likes to tell has a curiously lyrical lightness, not in the words and sentences which can be homespun enough, but in the spirit and color. We are always quite prepared to see the storyteller's prose taking on wings, and her poetry condescending to amble for a few paces in neighborly fashion on foot.

The striking feature in the collection of tales is the author's power and skill in the weaving of appropriate backgrounds and atmospheres. Contemporary England, France, and Italy, each has its tale; the medieval France of trouveres and troubadours has three; medieval England has two, medieval Italy, three; and medieval Germany, one; Reformation England has one, the last, which gives its name to the volume; and early Victorian England another. There are not many writers today whose erudition would enable them, even if they had the art, to reproduce the atmosphere of so many diverse settings. It is to be noted, moreover, that Mrs. Eden does not have to go to Wardour Street for cheap and conventional properties.

Nearly all the stories have a definitely Catholic tone. And here again the author displays, or rather hints at, unusual erudition. The reader, time and again, is obliged to suspect, and respect, the presence of a wide reading in the Fathers of the Church, Catholic spiritual writers and Catholic chronicles of antiquarian interest. The learning does not obtrude itself unduly; it never burdens the tale, which invariably goes its way with a butterfly buoyancy. Mrs. Eden makes us realize what fine literary material is lying unused which so many Catholic writers pass over in favor of hackneyed modern "problems."

It would not be easy to quote a brief excerpt which might convey the full flavor of Mrs. Eden's prose. The poetry lends itself more readily to quotation. Here is the sonnet, called "Landmarks," which introduces the delicious tale of "Rustiquel the Rat-Catcher":

> **Cherish no landmarks, deeply-flooded soul,**
> **Only the highest, lest thy nature crave**
> **The little showers that take but gentle toll**
> **And show the grass-tips 'neath their inch of wave.**
> **Say not "This causey props the road I trace,"**
> **"I know my way by such and such a bough,"**

Doubt not the day is fixed that shall efface
Token of every track thou followest now.
But take thy bearings from the hills around
And when earth fails thee and thy world of dry
With all its wonted paths is lost and drowned
And on the hurrying spate thy dreams go by
Like oaks up-rooted, look aloft and see
Where, unsubmerged, Christ reigneth from the tree.

"Whistles of Silver" is illustrated with wood-cuts by the author's husband, Mr. Denis Eden, a painter of high standing in England. A technical appreciation of these illustrations must be left to art critics. All that can be said by the layman is that they fit into the text felicitously. The reader catches ravishing glimpses of the people and scenes in Mrs. Eden's pages through another window and at a different angle. It is not easy to translate wit and humor, as well as atmosphere, from one art into another. But this is precisely what Mr. Eden has succeeded in doing. Here, then, we have a book of unusually good poetry, prose and pictorial art—all familiarly Catholic in tone and inspiration.

J. J. DALY, S.J.

FRANCE

THE FRENCH REVOLUTION AND NAPOLEON. By Leo Gershoy. New York: F. S. Crofts and Company, 1933. Pp. xiii, 576. $5.00.

Only recently have historians been putting first things first before the once over-featured French Revolution. Professor Gershoy is one of this newer fraternity, able to write a specialized work that will yet leave the proper impression that its subject is only a segment and aspect of the times. So in Chapter III he reaches far enough back to speak of Newtonian Rationalism and the Romantic movement; only one could wish he had gone on to note the interweaving of the Newtonian Rationalist, and early and late old Romantic filiations (which latter obvious distinctions of spirit he also ignores). Moreover, he might have broadened even more the period discussed. What may be called the *terminus post quem* is important not only in discussion of results of the revolution in the usual sense (the lack of which is perhaps Prof. Gershoy's chief weakness) but also in introducing classification according to the political motive of the writers into appreciation of the vast bibliography that has grown up on the subject. Gershoy might well have added, in the manner of Gooch, such a brief analysis of developing motive and *Zeitgeist,* to his otherwise trenchantly annotated critical bibliography of 25 fine-print pages. This is selected from the several hundred thousand works which it is no exaggeration to say are involved in this field.

So far from the French Revolution bringing even political democracy (even

temporarily), Professor Gershoy shows all through his work that not only the Era of Napoleon but *all* the phases of the Revolution itself, proved only for the benefit of the bourgeoisie; something that even the Socialist historian Jaures failed to see. It had long been emphasized for the period after Thermidor; Prof. Gershoy brings together the newer proofs of such as Sagnac and Pariset, Kerr and Brinton, for the earlier periods, too.[1]

The present reviewer feels that Gershoy's volume is not only the most considerable one-volume compendium on the subject in English; but it has most carefully presented, or given consideration to, the latest views of all three of the schools contemporary French Revolutionary historiography which may be divided into: official Aulard, Catholic La Gorce, and revisionist Mathiez. And trenchant, thumb-nail portraits keep the story live and human; the individual is not lost in movements and circumstances. Gershoy perhaps cleaves too closely to Mathiez in the severity of his estimate of Danton (pp. 220, 279-80) when compared with his soft-pedaling and almost idealization of the Puritanic and fanatic illusions of grandeur dominating Robespierre (pp. 282-292).[2]

Professor Gershoy's economic treatment is superior to any of the one-volume treatises in its care, regard being had for the varied authorities, and even more the decision to interweave the economic motive continuously through the narrative rather than use the old "separate-chapter" method.[3]

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[1]And Gershoy might well have gone on to show that even the bourgeois grip was not to remain permanent. That was to come only subsequently by the slow and fitful working out of subsequent influences up from the Industrial Revolution and other movements more deep-lying than the spectacular, superficial fireworks of the French Revolution. So that that Revolution was but an abortive stage in the process that eventually also was to lead to full Democracy—or have we it even today effectively?—but only by a gradual widening of the circles of the politically active, through successive enfranchisement of groups, at the convenience of those immediately above.

[2]But in his treatment of the Terror (pp. 219-221, 263-7, 272-292), also on the horrors after the taking of the Bastile (p. 118), we see how we have to admit with Aulard that the sovereign people wrought vengeance only after the manner of their kings—if such had only been their teaching by example, so much the worse for the repose of the latter's rascal souls: " . . . they were the deeds of a people whom an oppressive government had rendered callous to cruel violence and brutality" (p. 118).

[3]Evidently with careful regard for the pioneering of Ballot, Bourgin and Renard and Weullersse, he shows how French industry under the Old Regime was not as backward as we used to think (pp. 51 ff.). Also that the prosperity of the 'eighties "that brought wealth and comforts to the upper and middle *bourgeoisie* increased the hardships of the petty craftsmen and workmen" (p. 54), and that Necker's report of 1785 was a "rude revelation to hard-headed business men who imagined that prosperity could be maintained permanently by inflating the purchasing power instead of balancing the government budget" (p. 95)—food for thought in our

Probably the most brilliant section of the book is the detailed and complex analysis—in which may be seen traces of careful collation of the varied views of such authorities as Martin, Lefebvre, Caron, Marion, Nicolle, Deprez, and others—of who profited, for how much, and for how long, by the Revolutionary sale of land (pp. 309-311). This is so complexly thorough and yet compacted that it must be read in full. But like the other one-volume studies, Professor Gershoy still cannot find space to similarly interweave the closely related developments in manners, customs, thought, recreation, styles, everyday life, etc. Revolutionary historiography is still incomplete. There is still room for improvement—and yet another book!

It becomes quite clear that Napoleon's greatest mistakes were the decision to go into Spain (even more to have set up his brother there), the persecution of the Church (p. 370), the decision to go into Russia to enforce the Continental System, and, when the Grand Army was already on the way, to press on from Smolensk (p. 498). Gershoy is not an apologist for Napoleon, as his failure to indicate the atmosphere and circumstances of the Enghien and Palm incidents testifies (pp. 376-7 and 411). The treatment seems a bit partial to England all the way, but the inescapable impression of advocacy in the section on the rupture of the Peace of Amiens (p. 381-7) astounds historical "disinterestedness." Napoleon's consolidation of certain social, legal and economic advances out of the Revolution, his real claim to positive historical significance, is well treated.[4]

Gershoy has made an obvious effort to be very fair, even sympathetic, to the Church.[5] It appears that finally not only can a properly beautiful picture be drawn of the lower clergy (pp. 32-33), but (and here Gershoy marks another long-needed advance toward what Catholic scholars have always maintained) also of the great mass of the upper clergy (p. 31). And even where we are used to finding the usual attempt to relate the lower clergy to

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present situation. He uses modern up-to-the-minute economic terms that even apply to those times: "acute depression" (p. 51), "inflation" (pp. 262, 309), assignats artificially "pegged up" (p. 309).

[4]Compared to the careful handling of selfish yet clumsy Prussia in 1806 (p. 410), and the failure to note the meretricious Francophile obsequiousness of most of the Holy Roman Empire princelings at that date, the Austrians are not given the credit they deserve in the opposition to Napoleon. There is no indication of how near they came to overturning Napoleon through his own mistakes at Marengo in 1801 and before Wagram in 1809: that Austria was still a Great Power. For Marengo, Gershoy repeats the old legend of Desaix "hearing the sound of the firing" (p. 361).

[5]One little factual error we cannot overlook is the statement on p. 4, that Ravaillac, assassin of Henry IV, was "a Jesuit priest." Valet de chambre, lawyer, schoolteacher, he failed to obtain admission to either the recently-founded Order of Feuillants or the Jesuits.

the Civil Constitution of the Clergy, Professor Gershoy is careful. He says (pp.165-9):

> At first the lower clergy applauded the religious enactments. But the refusal of the deputies in the spring of 1790, to declare Catholicism the state religion made them lend a willing ear to the complaints of the upper clergy. . . . Only seven bishops took the oath . . . slightly more than fifty per cent of the parish priests and vicars refused.

But the Catholic scholar and teacher will be kept busy with statements such as (p. 65):

> What he [Voltaire] attacked were the particular dogmas, the accretions of theology, the complex mysteries and contradictory ceremonials of Christianity that through the ages had engendered fanaticism, persecution, and bloodshed, suppressed reason, and persecuted free thought.

Also with pro-Gallican passages (as on p. 167), and this typical modern nationalistic Hegelian deification of the State (p. 66):

> Voltaire, Montesquieu, and Condorcet, or atheists like Diderot and many of the Encyclopedists, the philosophes were at one in certain fundamental claims. They made the case for intolerance impossible and made certain the principle that the secular state could no longer place itself at the disposal of a religious organization . . . they proclaimed the right of the state, in the name of the social good, to supervise, regulate, and control the internal organization of the church.

Yet Professor Gershoy gives a very good picture of the persecution of the Church under the Terror (p. 225); of the Catholic revival, despite some persecution, on the passing of Robespierre, even though the Thermidorians "were all free-thinkers and had not dreamed" of this effect (p. 295-296); and finally how with Napoleon (p. 366):

> Indeed, the first acts of the provisional consuls had given reason to hope that the persecution of Catholicism would be ended. . . . Subject to certain restrictions . . . the clergy were liberated from the hostile surveillance . . . the vexatious oath . . . replaced by a simple oath of fidelity. . . . The official revolutionary religion . . . left to its own resources to survive or fail.

Professor Gershoy may in fact be taken to intimate that so strong was the religious spirit of the masses, that if that benevolent neutrality had been continued by the State, it would "have ultimately solved the problems of religious dissent in France" and that here Napoleon's Concordat in part really amounted to political interference (p. 366).[6] Some may feel that it was too bad the

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[6]Here royalist Catholic historians such as La Gorce have perhaps erred in treating Napoleon more tenderly than the Revolution proper; at least Madelin does not. For Napoleon's threat to the Church was more insidious. His purpose, Professor Gershoy intimates by citing the reference to "my sacred gendarmerie" (p. 367), was to turn the Church into a police tool of the State—a good analogy

Church was not in a position from the very beginning of Napoleon's career, to continue the same uncompromising opposition to the Dictator, that she had held toward the Revolution even in its earlier more democratic days but when nevertheless it was already involved in error toward the Church.

A touching finishing picture might well have been the charity of Pius VII to Napoleon. He foregave him his continual provocation, and after his fall not only offered his relatives a residence in Rome, but used his influence in England with a view to mitigating the harsh conditions of captivity at St. Helena. Indeed, the physician who last attended him, and the abbé who administered the last rites of the Church as he died reconciled to his Maker, had been sent through Cardinal Fesch.

MAJOR L. YOUNCE, PH.D.

CONVERSIONS

THROUGH THE EAST TO ROME. By the Rev. J. G. MacGillivray, M.A. New York: Benziger Brothers, 1932. Pp. vii, 263. $2.15.

THE LONG ROAD HOME. By John Moody. New York: The Macmillan Company, 1933. Pp. x, 263. $2.00.

FROM FAITH TO FAITH. By W. E. Orchard. New York: Harper and Brothers, 1933. Pp. 310. $2.00.

A Scottish Anglican missionary to the East, an agnostic American financier, an English Congregationalist pastor in West London—but for a common mother-tongue, there was little enough in kind between these three whose quest of the best in life has ended at the same goal. And yet one Church at length embraces them all precisely because she could fully satisfy the peculiar and paramount need of each alone. For the first she solves the heart-searching problem of a Christendom both worldwide and united. To the second she makes both sure and stable the precious norms of right and wrong in human conduct. In the third she becomes the pledge and consummation of personal union with Christ. Apart from their similar ending these narratives own no common term of comparison, nor need one; their appearance at the same hour is coincidence enough. The tricolor spectrum of their witness blends in a ray which could only focus on a fellowship well worthy of its name of Catholic, as destined for the perfecting of all men everywhere and always.

Mr. MacGillivray's career was wholly pastoral, and, though of Scotch origin, he was ordained in England after preparatory studies at Cambridge.

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would be, as Peter the Great had done in Russia just a century previous, by the institution of the lay Procuratorship of the Holy Synod.

His churchmanship was somewhat that of Dr. Gore in the earlier and less radical phase of that leader's influence, but never was anything that would now be called "Anglo-Catholic," elastic though the name has come to be. Ten years of a typical ministry in England were succeeded in 1910 by his joining the Archbishop of Canterbury's mission to the "Assyrians" of Syria and Kurdistan—a people no more Assyrians in fact than the writer of this notice is a Pict. Some of the author's most instructive pages record his observations of religious and political conditions in that region before the war, beginning with a helpful sketch of their roots in early Christian history.

With a zeal for Christian unity ever at heart, the missionary followed in 1911 the approach of his own superiors to the Nestorian schismatics. By what authority were certain formularies, already discredited with many Anglicans, proposed as tests of doctrinal agreement between Canterbury and Qudshanis? What and where was the authentic norm of whole Christianity, which alone could bind both parties to any genuine unity? These and kindred questions, when traced to their historical source, insistently came to one: "Can it be that the Church of Rome is right after all?" Practical issues were as fruitful of misgiving as speculative principles. Already this inquirer (like every other straight and serious thinker) had found it impossible to define the corporate belief of the Church of England, even when asked to state it. The Kikuyu controversy and the corrosive principles advanced in "Foundations" served to confirm an impression that Anglicanism "did not know its own mind." The endless process of subdivision permeating the schismatical sects of the East continued to proclaim the tendency and fate of all wilful departure from the Mother of Churches. Miss Underhill's theory of a mystical life without a definite faith provoked a thorough study of the Christian mystics, which proved that they had reached a very different term than the mystics of the pagan East, and only because they had started from a very different conception of God and conviction of His truth. An attempt to put in modern Syriac some spiritual principles from Anglican sources, exposed the fact that these sources were Catholic wherever they had any substantial value. Finally a comparison of Gore's "Roman Catholic Claims," with Dom Chapman's crushing reply revealed the actual weakness of the one position and strength of the other.

Thus when the outbreak of war set a term to the "Assyrian mission," Mr. MacGillivray returned to England with some positive Romeward bent of mind. Hesitant lest this inclination might be partly owing to the loss of his latest employment, he resumed the regular work of his ministry, this time in Scotland. There was enough to do, and under favorable conditions, yet the troublesome question again pressed for an answer. Anglican fancies of "continuity," contrary enough to patent fact in England, were equally unintelligible in Scotland until some of the Highland districts could be proved historically

schismatical. Now came the pitiful post-war propaganda of "social progress" echoing from pulpits set up to call men to the aims and claims of another world than this. Practice and theory, never at one in support of Anglicanism, seemed to be unanimous at least in crying "Come ye out of her!"

But the hearer of such a call should know whence it came. He set himself in 1915 to read both sides of the question thoroughly, and to note in full such statements as seemed both pertinent and well-established. The resulting mass of data was classified under twelve main topics, and judgment reached in each on its own merits. Disposed to conclude therefrom that "Christianity and Roman Catholicism were one and the same thing," Mr. MacGillivray was the more determined to be impartial, and examined next the whole apologetic foundation of Christianity itself. The result was similar: "the evidence seemed all to point one way." Not even yet fully convinced, he turned to consider every serious objection that he could find against the Church and her doctrine. The force of these objections was not minimized, and yet each seemed to be outweighed by its normal solution.

Conviction was now beginning to form. In 1917, after a kindly understanding with his Bishop, Mr. MacGillivray left his cure of souls for the time, and went out to Salonika as a motorist for the French Red Cross. Discharged soon after the armistice, and reaching England on the following Christmas, he found that his long-debated question had resolved itself into a few essential issues, upon all of which he was now fully convinced. He was received into the Church on Candlemas, 1919, and after studying theology in Rome, has exercised the priesthood in England since 1924.

Father MacGillivray's decision was no hasty one, and the calm deliberation sustained throughout an inquiry so long and of such uncertain issue is as edifying in itself as the courteous sincerity with which the tale is told. The method and results of his inquiries are worth reading in full detail. We assume that all converts beginning from the same postulates must exhibit the same process of reasoning; and in substance this is true. Our gain from each fresh account of such inquiry is not a set of novel principles of solution, but an interpretation of the permanent principles in contemporary terms. Today's religious problems, not yesterday's, are discussed by one whose incentive to their solution has not been merely academic, but vital to the deepest interests of a typically modern life. Evidential theology assumes a practical form, and that form is a familiar one.

Mr. John Moody's story is the sixty years' career of an American man of finance, told with a quiet frankness that never lacks either interest or dignity. Candid and explicit about his blunders and the qualities that made them natural, he is silent about his conspicuous success, and brief in reference to those facts which reveal his higher and firmer traits, while any one who has

proved a friend and helper may be sure of grateful acknowledgment. Such unstudied features of a book reveal its maker, and the course of his life through fifty energetic years prepares the reader to expect that the goal of success and assured position must become the starting point of a further search for things still more enduring. The brief account of that last quest is Mr. Moody's direct *apologia,* and it is ethical rather than dogmatic. "The reason for this story," he writes, "lies in the fact that it has a happy ending. . . . The worth-while moral in the story is, that it is still possible for a man, who has been a product of this hard, unbelieving, materialistic age in which we live, to be naïve enough to confess his faith with unrestricted candor." Too rare are such testimonies from men of wide and well-earned repute.

Mr. Moody began life with the blessing of a good home if not a wealthy one, and though "a regular boy" and a recognized leader of his schoolmates, his moral and religious training was by no means neglected. His parents were Episcopalians, and—a rarity in the '70's—taught by the Oxford Movement to regard their Church and themselves as "Catholic." The curtailment of his schooling by early employment found compensation in a decided talent for writing and a lifelong taste for serious reading. He was by nature an active and direct thinker. The patent diversities of Anglican "catholicity" began to perplex him even in childhood, and had already in his fifteenth year deterred him from a first Communion, a postponement due to no tepidity or indolence, but solely to an honesty of conscience which was ever to be his saving grace. Soon afterward the reading of agnostic literature had robbed him of all faith in the supernatural, and the appalling swiftness of this ruin in a youth of upright habits and untainted aims may furnish food for reflection to any who regard the Church's ban upon such reading as mere advice to the unstable.

Throughout the author's early manhood in a highly reputable Wall Street house and his first lone ventures thereafter, his growth in unbelief was balanced in effect by his own idealism. It led him into journalism as a medium of instruction, into the single-tax philosophy as an economic panacea, into practical politics as calling for reform, into several philanthropic projects, and meanwhile into unwise though legitimate investments as sources of maintenance for all these varied interests. His sketch of this period of our past history, and of the men with whom he shared it, is one of the most interesting parts of his story. But the outcome was complete financial ruin to him and his family. This catastrophe developed the real man, for he met it by plodding slowly back to solvency and restored credit through years of hardship and self-denial. But if the struggle was maintained without self-pity, it made an overruling providence and an immortal destiny seem less than ever reconcilable with the ceaseless strife of the common lot. The ruined homes and grave-strewn fields of France only confirmed such doubting. But the general decay of morals and the open repudiation of their very standards seem

to have made the deepest impression, and at the same time to have spurred this inquiring mind to seek an enduring basis for the laws of human conduct, if any laws there were.

It was the man of good will seeking that peace on earth which the Man of Sorrows could both possess and bestow; and his search was to be rewarded. Its end began to dawn upon him before an altar of Our Lady in Vienna, during a visit thither in business interests. Wisely he waited to see if this sense of supernatural truth and power had been only a transient emotion. But it persisted as an incentive to further inquiry. Mr. Moody then investigated thoroughly the doctrines and claims of the Church. When these seemed to be conclusively established, he turned once more the pages of his early teachers in cultured agnosticism. Their arguments were lifeless. The truth had dawned at last, and he responded, entering the Church in his sixty-third year. At the summit of success in life, and with every earthly title to contentment, he has offered the ripened fruit to God the giver.

Dr. Orchard needs no introduction. His recent profession of the Catholic Faith after long and eminent leadership in another field has caused this full account of his motives to be widely and eagerly awaited. Its dispassionate witness is strongly entrenched; in fact, those critics who would censure the author's action seem to be reduced to the necessity of displaying their own caricatures of the Church and marveling (as well they may) that Dr. Orchard could accept such terms. "From Faith to Faith" will remain one of the greatest books of its class in English. Though orderly in progress and clearly written, it exacts close attention, and to this extent is "not easy reading," but many will find the task of concentration richly repaid.

The author frankly announces a thesis to be proved by the witness of his own experience. It is that "an evangelical conversion needs for its explanation, as well as for its perfecting, an acceptance of the claims of the Catholic Church." As a young man of moderate education and a railway clerk, having believed from childhood that Christ is the indispensable and only Saviour of every soul, he experienced that sense of deliberate self-consecration to Christ and of personal union with Him which evangelicals in those days commonly called "conversion." It is this interior state (often attained by quite deliberate effort, and by no means wholly sentimental) which, Dr. Orchard maintains, must find its surety and its consummation in the living faith of the Catholic, or find them nowhere.

In his own case a wise pastor saw to the practical nurture and development of this conviction of Christian responsibility, and its growth led in time to the further sense of a call to the ministry. The first years were laborious, and made more so by a belated but successful course of higher education. After busy years fertile in precious experience, Dr. Orchard became pastor of

King's Weigh House Church, just between a retail commercial part of London and one of its best residential districts. It was here that he grew into a "Free Catholic" while still formally a Congregationalist. There is much that his record lets us see without his telling it. Beneath a crowd of claims upon time and thought sufficient of themselves to exhaust his natural energy, there always flowed the current of a deeply interior life. It would be hard to say whether communion with God or leading others to know Him had the prior claim upon his zeal. Contemplation and action were both alike energized by an intelligent sincerity that knew no compromise and feared no censure. While England was at war Dr. Orchard insistently preached peace at the risk of being misinterpreted and even imprisoned. Into a Congregational Church he gradually introduced every Catholic form of worship which his own ideal of prayer had taught him to value. He could and did explain himself to his own congregation, but its personnel was ever transient, and the general public knew him chiefly as a riddle. At the same time his writings revealed his ability as a constructive thinker, his activities on behalf of Christian unity gained him the friendship of its various promoters, and even those who could least understand him honored his sincerity and steadfast self-devotion.

No such man could continue as an isolated religious eclectic. Charity, ever foremost with him, made Christian fellowship a ruling passion, while his own originality was forming a congregation *sui generis* in all the world, the very reverse of a unifying influence. He taught the organic solidarity of a world-wide Church, and his ministry bore consoling fruit in individual lives; yet men departed from his sphere of influence to separate in all directions, each in search of what seemed the best that had been left behind. Nor did the cause of a wider unity advance among his fellow-preachers; every attempt to form some organized nucleus came to nothing in the end. A Christianity condemned to individualism was the heritage and sphere of a Christian firmly convinced that the individual could not continue to live and thrive in declared independence of the corporate. And if hope were sought in the contemplation of a farther future, what shape could the vision assume? Rome must be its center and its head, as Dr. Orchard early came to see. In the mean time the same *lex credendi* was speaking through the *lex orandi*. Molinos and Juliana of Norwich were Dr. Orchard's first teachers in a definite philosophy of interior prayer, and they led him to the Atoning Christ, his first great attraction. But the Mystery of the Redemption was to them the heart of the Catholic Faith, and again Rome was calling.

When these and other influences at length united in pressing for a decision, there was the inevitable struggle with obstacles, chiefly, in this case, the Church's "exclusiveness"—a quality both inevitable in itself and clearly enough displayed in the New Testament, so long as something else is not mistaken for it. In time the difficulties were removed by fuller information,

much of it acquired in Rome. It was in the Eternal City itself that Dr. Orchard was finally welcomed into the fold of the Good Shepherd. His account up to this point is bracing and edifying of its very nature, but what follows will be of wider and, perhaps, more permanent utility. Three concluding chapters, on "the issues between Evangelicalism and Catholicism," "some objections considered," and "the wider issues involved," are earnestly commended to every apostolic worker in the Church for their clear and thoughtful discussions of the apologetic issues as they stand today. From one fully conversant with all the main features of present religious opinion, these chapters, even apart from their sound reasoning, contain information whose value can hardly be overstated. The whole tone, moreover, of moderation and fairness in which the beliefs of others are here reviewed, lends added grace to the word of a fervent Catholic who knows modern Protestantism as thoroughly as any man alive. Let it be repeated, his book is one to have at hand for thorough and detailed perusal, not to skim over at a rapid glance. Used as it should be used, it is already a good gift from one whose aim for the future, as in the past, will doubtless be the greatest good to the greatest number.

W. H. McClellan, S.J.

AMERICAN-VATICAN HISTORY

United States Ministers to the Papal States, Instructions and Despatches (1848-1868). Edited with Introduction by Leo Francis Stock, Ph.D., LL.D., Washington, D. C.: Catholic University Press, 1933. Pp. xxxix, 456. $5.00.

Few chapters in our diplomatic history have been so completely neglected as those which concern the relations of the United States with the Papal States. In spite of the fact that these relations extended over twenty years of frank and cordial cooperation, they received only occasional mention in the "Researches" of the American Catholic Historical Society of Philadelphia and in the "Historical Records and Studies" of the United States Catholic Historical Society of New York. To be sure, an analysis developed from material compiled in Italy, was published by H. Nelson Gay, but a systematic search through the official despatches in the Department of State at Washington was not undertaken until 1922, when Dr. Leo Francis Stock, editor of the present volume, prepared a survey which was read before the meeting of the American Catholic Historical Association, under the title, "The United States at the Court of Pius IX." Other studies by the same author were presented either in the form of periodical

articles, pamphlet-reports or in lecture-series. In Dr. Howard R. Marraro's survey of "American Opinion on the Unification of Italy, 1845-1861" (New York, 1932) are interesting references to the field in question, while a dissertation recently prepared at the Catholic University of America by Sister Loretta Clare Feiertag gives the reaction on American public opinion of the diplomatic relations between the United States and the Papal States.

These latter volumes point to a fresh interest in the subject and emphasize the value of a carefully-edited compilation of the despatches and instructions which passed between United States officials in Washington and Rome. An American consular representative was commissioned at Rome in June, 1797, but it was not until April, 1848, that formal diplomatic relations were established by the appointment of Jacob L. Martin as chargé d'affaires (April-August, 1848). Lewis Cass, Jr., his successor (1849-1858), was elevated to the rank of a resident Minister in 1854. This rank was held by those who followed him, John P. Stockton (1858-1861), Alexander W. Randall (1861-1862), Richard M. Blatchford (1862-1863), and Rufus King (1863-1868). The latter also had a brief appointment from April 16, 1861, to August 6, of the same year, when he resigned to serve as Brigadier-General in the Volunteer Force in the Civil War.

In describing his first audience with Pius IX, Jacob L. Martin, writing to the Secretary of State, James Buchanan, stressed the cordial nature of the reception he received from the Holy Father. The latter, according to the new chargé d'affaires, took him "by the hand, both coming and going," and assured him "of the great pleasure which it gave him to enter into diplomatic relations with a country for which he entertained so high a regard." The Sovereign Pontiff added that he was gratified by the progress of the Church in the United States and that he had formed a high opinion of the character of its clergy. "The interview was to me," writes Martin, "a very pleasant one, and impressed me vividly with that benevolence of character and gentleness of demeanour for which Pius IX is proverbial." Before retiring, Martin ventured to suggest to His Holiness that some officers of the American squadron had come to Rome, chiefly with the hope of having the honor of being presented to him. The audience, of course, was promptly arranged.

Lewis Cass, Jr., Martin's successor, arrived in Rome when Italy was in the throes of revolution, complicated in many regions by civil war. Naples and Sicily, in addition to intestine feuds, were at war with each other. Sardinia was contending, simultaneously, with Austria and two of her revolted provinces. Venice was in a state of siege. Genoa was on the eve of rebellion, while the republic of Florence was at the mercy of a dangerous mob, which spurned the decisions of the Assembly. This spectacle of disorder and violence repelled Cass. He writes:

> It would really seem in many instances, which have come under my own observation, as if the people were bent on making democracy appear ridiculous; and the recent conduct of the populace and authorities of Genoa and Leghorn and Ancona, are fitter for the records of a lunatic asylum than those of history.

Shrewdly enough, the American representative could see only one outcome of this chaos: foreign intervention.

On the other hand, Cass's glances into the future were not always prophetic. Arguing that Italians hated each other "with a hatred surpassing that of common Christians" and that a "man's Patria, in Italy, is the most limited thing imaginable," he predicted that a commercial league, "in the nature of the German Zoll Verein," would be entirely impossible in Italy. "For no purpose whatever," he declares, "social, political or commercial, has it ever been found practicable to unite the different kingdoms of Italy into one association.

Cass was on safer ground in praising the advantages of a commercial treaty between the United States and the Papal States. He saw in Italy a good market for the disposal of tobacco, since "in this country, it is in universal use, all classes, from the highest to the lowest, indulging in smoking, and many in the use of snuff."

The letters which were exchanged between Washington and Rome with reference to reception of Monsignor Bedini in this country are of special interest and value in view of the projected publication of an extended account of this episode by Dr. Peter Guilday in the "Records and Studies" of the United States Catholic Historical Society.

Lewis Cass, Jr., was succeeded by John P. Stockton, a Princeton graduate and subsequently United States Senator for New Jersey. In one of his first despatches, the American Minister made a statement which would be of no small appositeness at the present time. He writes:

> The importance which this mission has in the eyes of the Catholic powers of Europe, the present political position of the continent; the relations between the propaganda and the Catholic Church in America and throughout the world, make Rome as a point of observation one of the most important diplomatic positions abroad.
>
> All the great powers are represented here by Ministers Plenipotentiary, who are the men of the first rank and position in the countries from which they are sent. The Diplomatic Corps is said to be the largest as it is the most distinguished in Europe. There are probably more resident American families here than in any capital of Europe, while in the winter season Rome is filled with our countrymen who come to visit the Capital of the Caesars and the Pontiffs.
>
> It was a great mistake to classify this mission in reference to its *commercial* relations alone, a proper regard to the politics of Europe, the dignity of our Country, the comfort and satisfaction of thousands of our citizens require that this mission should be placed on a different footing.

The other documents in this volume throw a wealth of light on many

interesting phases of efforts to prejudice the Holy Father's strict neutrality during the Civil War, on the arrest of John H. Surratt, a Papal Zouave, charged with complicity in the assassination of President Lincoln, on the Mexican adventure of Maximilian, and on the true sequence of events which led to the closing of the American legation in Rome.

All this material is edited with the scholarly accuracy which has marked Dr. Stock's previous contributions to the diplomatic history of this period. The documents are arranged, simply enough, under the successive Ministers in the order of despatch. As a rule, the original spelling, capitalization, punctuation, abbreviations, and paragraphing have not been changed. There is a full table of contents and a competent index. The Introduction, giving the gist of some of the author's previous articles, is a valuable summary. Librarians, scholars and students will look forward to the second volume in this series sponsored by the American Catholic Historical Association. It will likewise be edited by Dr. Leo Francis Stock and will provide the documentary material on the consular period in the history of diplomatic relations between the United States and the Papal States.

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